

The Iron Age

A Review of the Hardware, Iron and Metal Trades.

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The Manufacture of Pressed Fuel.

The utilization of inferior grades of fuel plays so important a part in the welfare of manufacturing industries abroad—notably in Belgium and France—that a brief account of the apparatus used in making pressed fuel will be of interest. In this country the most serious and, as we are told, now successful efforts in this direction have been made by E. F. Loiseau, of Philadelphia. In endeavoring to use the enormous quantity of anthracite slack annually wasted, he has been forced to contend with conditions differing largely from those observed abroad; and he has, therefore, with much persistence and judgment, pursued an independent path. In Belgium and France the raw material is the culm of bituminous coal, which was first used for making pressed fuel in Belgium in the year 1852. Since then it has grown in that country until considerably more than half a million of tons is produced, while France turns out more than double that quantity, and English, Spanish and Italian factories considerably swell the total.

The fine coal invariably produced in mining in considerable quantities is unfit for use on the grate without further preparation, and the purpose of the process and machinery to be described is to convert it into a shape in which it will be available for the uses to which the ordinary sizes are used. After being washed, if necessary, the fine material is mixed with suitable cement to conglomerate the coal dust, and then pressed into shape of cylindrical or square blocks, called "briquettes." Numerous substances have been proposed as a cement, among the most recent and promising being Irish moss, which is converted into a gelatinous substance by boiling or by addition of acids. The most general substance used, however, is tar, either in the crude state or in the shape of "dry pitch," prepared by separating the volatile substances by heating to a temperature of 570 degrees. The former method is used chiefly in France, while the latter has become very popular in Belgium. When the dry pitch is used it is simply mixed with the coal dust, and the mass is rendered plastic in a mixing cylinder by the application of superheated steam. With tar, of course, a much lower temperature will suffice. The machinery employed varies quite considerably, both as regards the fundamental principles involved and as concerns the details.

We show in the accompanying engraving a machine invented by the well-known French engineer, M. Evrard, which has been largely used for a number of years, both in France and in Belgium. The principal parts and their functions are the following: K is a cylindrical mold, into which the mass of tar and coal enters through an opening in the top. A piston, P, moves forward and backward in this cylinder, the mold being filled as soon as it is withdrawn. By means of a lid and a spring acting upon it the exit opening of the briquette may be altered so that the pressure can be varied—a device well adapted to regulating irregularities in the mixture and the charging of the mass. There are 16 of these cylindrical molds attached to the immovable disk S. The mold pistons P are actuated through the agency of the eccentric R. The entire operation is carried out in the following manner: The coal dust is lifted by the elevator, from the buckets of which it is dropped into cylinder B, where liquid tar is mixed with it. The cylinder B has a double casing, between which steam is conducted for the sake of keeping the whole mass hot. The work in the cylinder conveys the material to the mixer C, in which the ingredients are thor-

oughly stirred together. The mass rests upon a rotating platform, D, from which it is taken at intervals by the scraper G, adjustable by means of the screw X. It falls through four tubes, H, upon another rotating cylinder, from which it is distributed to the 16 molds described in detail in the above. When the briquettes are turned out of the mold they strike against L, causing the platform Z to drop, so that the briquette breaks

Wood Preservation.

We would direct the attention of those interested to the following circular, feeling confident that the assistance asked for will be gladly accorded by those in a position to contribute to furthering our knowledge of the preservation of wood:

The undersigned, a committee of the

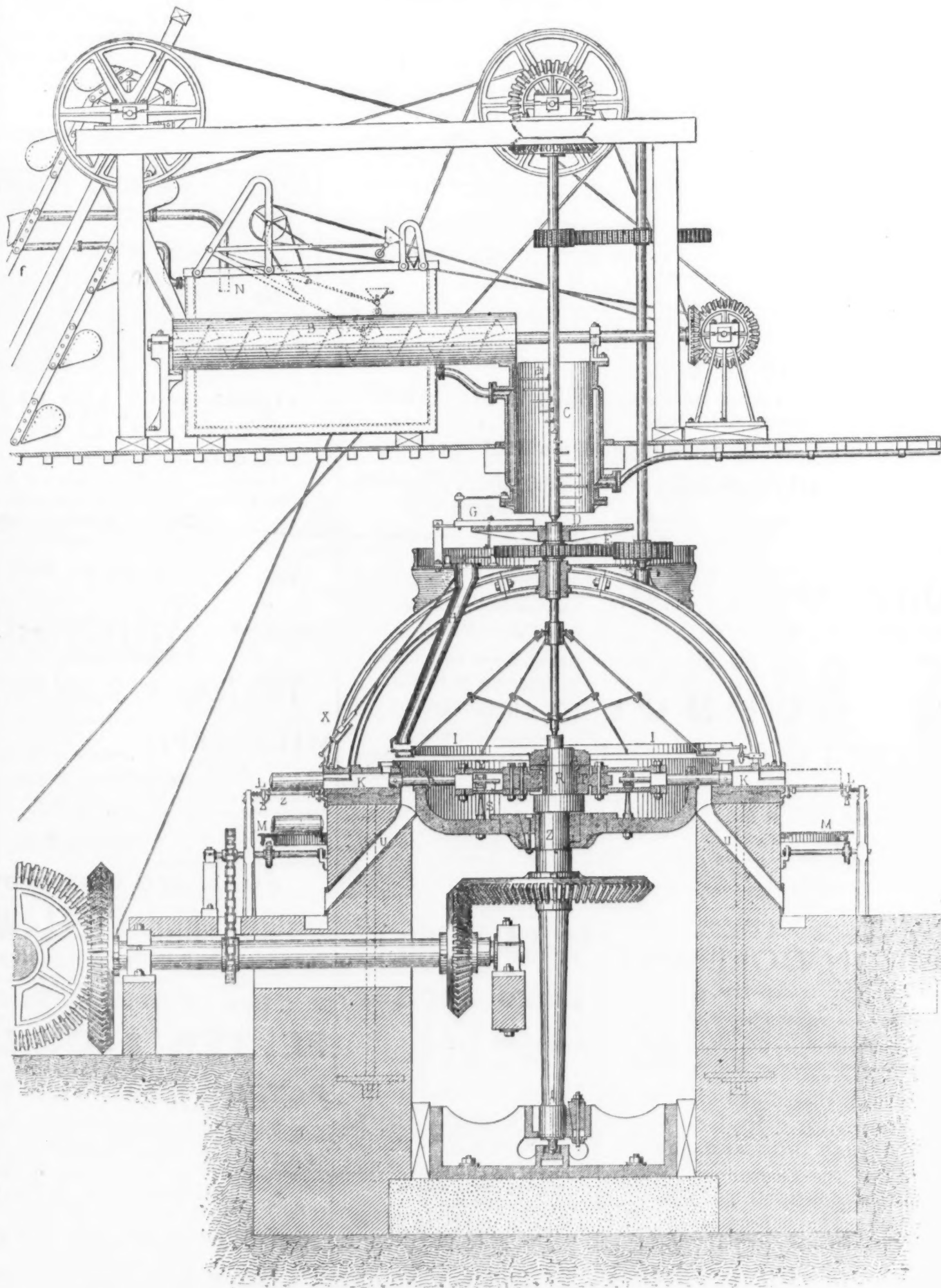
1. Preserving ingredients injected.
2. Quantity injected per cubic foot or tie.
3. Mode of application, process, time employed, degree of heat, pressure, vacuum, &c.
4. Subsequent use and exposure of timber (bridges, buildings or track).
5. Result of preparation and comparison with life of unprepared timber.

A Southern Rolling Mill.

The Birmingham Rolling Mill Company, W. B. Caldwell, jr., president, have erected a rolling mill at Birmingham, Ala., which, as will be seen from the following description, for which we are indebted to Mr. A. J. Moxham, superintendent, has been designed in every respect to meet the conditions of the locality, and may be considered a very good example of the type best adapted for that section of the country, as well as for the South in general.

The mill consists of a forge with 12 double puddling furnaces, a bar mill and a small mill. Though only medium in size, its appointments are superior, the object having been to make the mill as perfect as a judicious expenditure could render it. From the first it has been remembered that it is a Southern mill, and no expense which could add to the comfort and convenience of the men has been spared. The puddling furnaces are covered by a roof of 60 feet span and 21 feet high in the clear. It is 210 feet long. There are 28 feet between the furnaces. The stacks are of unusual height, 56 feet, and in order to prevent radiation are double lined until they have passed clear of the roof. Every furnace is provided with water doors and stationary water shields. Over-head telegraphs are used to convey the iron to the squeezer. A shed roof (kept up 16 feet in the clear to secure proper ventilation) covers the ash-pits and protects the men from the sun and the weather while they are cleaning their grades. All materials are delivered to the furnaces by means of an elevated track, so that there is no intermediate handling. The standings of the furnaces are nowhere more than 20 feet from the open, and there is nothing to prevent the free circulation of air throughout the whole building. At right angles to this building is the building covering the forge train, of 50 feet span, 21 feet high and 210 feet long. The train is 18 inches in diameter, driven by its own engine, having a 30-inch diameter cylinder and 48-inch stroke. It is connected directly to it and is speeded to 50 revolutions. The engine, a horizontal one, is of heavy and substantial design, and was designed especially for its work. The squeezer is large and heavy and will squeeze 250-pound blooms. It is the intention to bring out heats of 1000 pounds in four balls, thus securing long lengths of muck bar and reducing the percentage of crop ends. The roughing and finishing rolls are in separate housings and both are three-high. The muck bar is to be weighed and handled mechanically in drafts of 6000 pounds, by means of over-head hoisting apparatus.

Parallel to this building is the bar mill building, 50 feet span, 21 feet high and 300 feet long. This building contains the bar mill and boilers. The bar mill has a 16-inch train, driven by a 30 x 36-inch horizontal engine, directly connected, and is provided with a three-high finishing train for all sizes. The large amount of hoops, tire sizes and small tee and tram rails will permit of its being used. The roughing trains are three-high. Special provision is made for the automatic handling of small rails, in the hope that the locality will permit of a specialty being made of this class of produce. It is hoped that by the large use of three-high rolls longer lengths can be secured than by the ordinary methods, and that their use will be favorable both for an increase of product and a decrease of croppage. The boilers contained in this building are made of steel 5-16ths thick, all material having been tested before use. Nothing less than 60,000 nor more than 65,000 pounds tensile strain per square inch was used. They are suspended at such points as will secure the utmost freedom for



THE EVRARD MACHINE FOR THE MANUFACTURE OF PRESSED FUEL.

American Society of Civil Engineers, appointed to report upon the preservation of timber, earnestly solicit information concerning past experience in the impregnation and preservation of that material.

Particulars of failures in this country, and, if possible, reasons therefor, are especially desired. Also, information on the following points in each of the processes which may have been used:

1. Kind of timber operated on (green or dry), age, dimensions, &c.

This special and any general information on the subject is respectfully solicited.

Replies can be mailed to the chairman of the committee, B. M. Harrod, 122 Common street, New Orleans, La.; or to the members of the committee, G. Bouscaren, 82 West Third street, Cincinnati, O.; E. R. Andrews, 10 Warren street, New York city, N. Y.; E. W. Bowditch, 60 Devonshire street, Boston, Mass.; Col. Geo. H. Mendell, U. S. Engineers, San Francisco, Cal.; J. W. Putnam, P. O. Box 2734, New Orleans, La.

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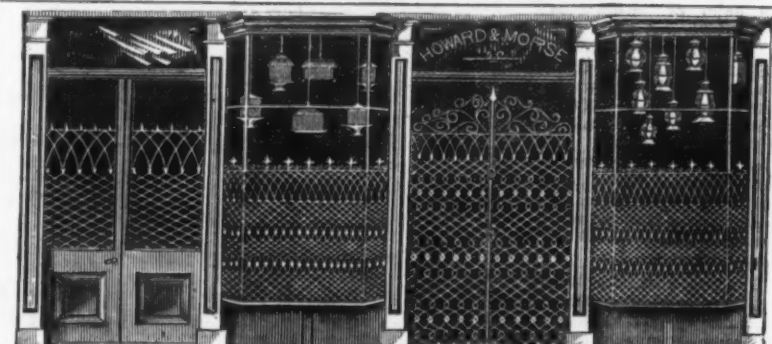
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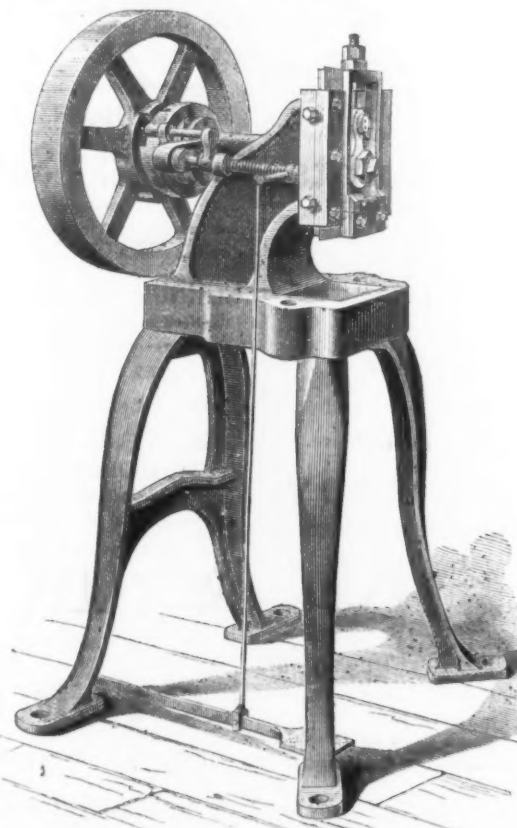
NEW YORK.

expansion and contraction without strain.
All holes in these boilers were drilled and
the longitudinal seams double riveted.
Great care was exercised to provide ample
blow-off area, and the most improved and re-
liable safety valves and steam gauges were
selected. Low water alarms are added for
each battery. The setting of the boilers is
such that any one department of the mill
can be run with its appropriate supply of
steam without the rest of the mill, and the
smaller machinery, shears, crusher, &c.,
have their independent steam supply. All
pipes and flanges are of wrought iron with
drilled holes, and expansion and contraction
in them is provided for by means of copper
goose-necks. Another building, parallel to
the bar-mill building, contains the 8-inch
train, driven by a horizontal 22 x 30-inch
engine. This engine is also intended to run
a cotton-tie mill. In this train, as in the
others, special provision has been made in
the turning of the rolls, arrangement of the
train, &c. for long lengths of iron. Ample
warehouse room for the finished product is
provided in this building, and the cars are
run directly into it for shipping purposes.
For the handling of scrap, ore, &c., a
special building has been put up, containing
shears, crushers, pulverizers, &c. The scrap
is carried directly to the shears on the cars,

like a
Many of
a pendulum
foot power. The
one to the other
by slacking up a
wheel and putting
place. When this
used for foot power
press of the same
doing the same amount
is not at all in the
used for power, as it
turned back against
operator is not altogether
steam power and can
any time by merely
and putting on the pendulum.

Drawing Canal Boats Through Locks.

It is known to few not directly engaged in
canal navigation that the canal officials of
New York have been devoting considerable
attention of late to the subject of rapid transit
through the locks, and that some interesting
and highly successful experiments have been
made. How necessary it is that some plan
should be devised to reduce the detention at
the locks to the minimum will be seen from a



A NEW PUNCHING PRESS.—NO. 1 POWER PRESS.

and as it is sheared it drops into hopper
trucks which stand upon a track 6 feet lower
than the shears. The sheared scrap is then
taken to the scrap furnace by the mill loco-
motive and dumped directly on to the stand-
ing. The ore is also handled with economy,
being thrown directly into the mouth of the
crusher from the cars and delivered into the
pulverizer therefrom. It is also distributed
by means of trucks, like the scrap.

Along both sides of the track, which runs
through the pig metal yard, will be placed
breakers. The pig metal, as unloaded, will
be thrown on these and broken, thus saving
this labor afterward. To avoid constant
handling of material a locomotive has been
purchased for it, and over a mile of rails has
been laid. More than 1200 yards of masonry
has been used in the foundation. With ex-
ception of lathe, crusher and pulverizer, the
whole mill was built in Louisville; the
boilers by the Jos. Mitchell boiler yard, and
all the mechanism by Ainslie & Cochrane.
The first drawing was completed about
the 1st January. All the patterns, even to
the engines, had to be made. Notwithstand-
ing this, it is probable that the forge has
been started, and by the middle of July the
whole mill will be in operation.

A New Punching Press.

The Peerless Punch and Shear Company,
52 Dey street, New York, have just com-
pleted a new power press for punching,
similar in design to their No. 1 foot press,
of which we published illustrations in
August of last year. In the form of the
frame the presses are alike. The pendulum,
however, is replaced by a balance wheel for
a belt.

The press has an automatic attachment,
by which it can be kept punching contin-
uously, or, by throwing this out of gear, it
will make single strokes as the foot is placed
upon the treadle. The punch holder is made
in the form of a clamp. The shank of the
punch is round, and fits the two half-round
grooves which are formed in the clamp.
Setting the punch is very quickly done. It
is only necessary to loosen a couple of set
screws in front, slip the shank of the punch
into place and then tighten up the set
screws. A wrench is then put upon a
square head, formed upon the end of the
crank-shaft, and the carrier turned down
till the punch enters the female portion of
the punch. The set screws are then tight-
ened and the work is done. This makes a
great saving of time. The working por-
tions of the press, like the crank-shaft, con-
necting rod, &c., are all made of steel.

One of these presses, although weighing
only 500 pounds, will punch a 1/2-inch hole
in 1/2-inch iron, or 1-inch hole in 1/2-inch iron,
and will cut a blank 6 1/2 inches square from
No. 14 iron. If used as a shear it will cut
iron 2 by 1/4 inches. The fly or pulley wheel
is 22 inches in diameter and weighs 125
pounds. The design is very neat and
at the same time strong. These presses
have been quite successful, and are much

few facts given by the Buffalo Commercial
Advertiser:

There are 72 locks on the line of the Erie
Canal. Loaded boats are detained at each
of these locks from 10 to 20 minutes, accord-
ing to the luck each has in making a good
entry into the chamber, and the skill of the
lock-tenders. If we make the average 15
minutes, which is not wide of the mark, it
will be seen that the delay at the locks dur-
ing each trip is 72 quarter hours, or three-
quarters of a day. There are about 4000
boats navigating the canals, and they make
at least seven trips each a season. It is
plain, therefore, that an immense amount
of time is lost at the locks each year.

In discussing this subject Mr. Porter, En-
gineer for the Middle Division, expressed the
opinion that he could perfect machinery that
would greatly expedite the passage of boats,
and finally received authority from the de-
partment to make a trial. The Port Byron
lock, which is the worst on the entire line of
the Erie, was selected, and last week the
machinery was put in position and got ready
for work. The plan is to utilize the waste-
water, so that the working of the machinery
will be attended with comparatively little
expense and no loss of water. Between
each pair of locks is a flume, through which
the water passes from one level to that be-
low. In this flume an improved water wheel
is placed, which connects by means of heavy
gearing with a shaft on the surface, running
from the head of one lock to that of the
other. On both ends of this shaft, about 6
feet from the lock, are friction wheels, by
which the power applied to the tow line is
regulated by an attendant. When the bow
of a boat appears at the lower end of the
lock a line is attached to her and passed
around a drum pulley on the outer end of
the shaft. The water is then turned on and
pressure applied to the friction wheel, gently
at first until the boat begins to move, and
then stronger until the vessel is drawn into
the lock at as great a rate of speed as she
could be towed by horses on the open canal.

The machinery has been in operation now
for some time and the results are highly en-
couraging. It will pull a loaded boat into
the lock in 2 1/2 minutes, and after the lock
tenders become more accustomed to oper-
ating it, this time will probably be cut
down. As yet it is only used to draw boats
into the lock, but it is Mr. Porter's intention
to adjust it so that it can be used to as good
advantage in pulling boats out of the lock
as in drawing them in. Another excellent
feature of Mr. Porter's invention is that it is
comparatively inexpensive. The entire cost
of fitting up the Port Byron lock with this
power was about \$800. The canal authori-
ties should lose no time in providing the Jo-
dan lock and those at Syracuse with this ma-
chinery. These five are the only locks on
the entire line of the Erie in which loaded
boats going East are lifted. These should
be furnished with power at once, and the
other single locks as rapidly as possible. A
small amount of money could not be expend-
ed for a better purpose than this on the
canals.

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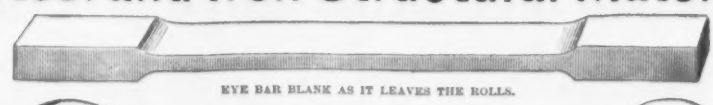
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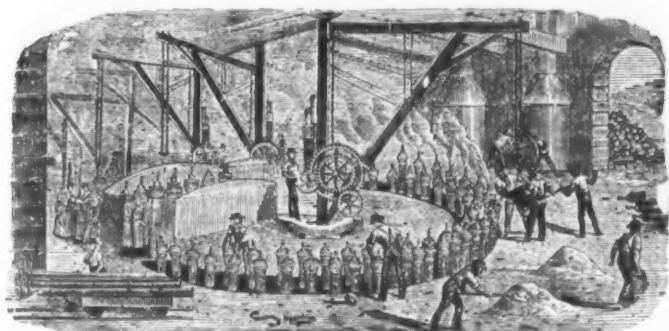
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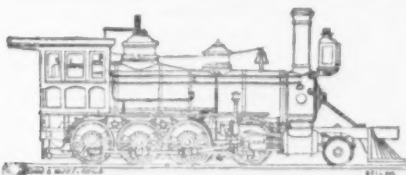
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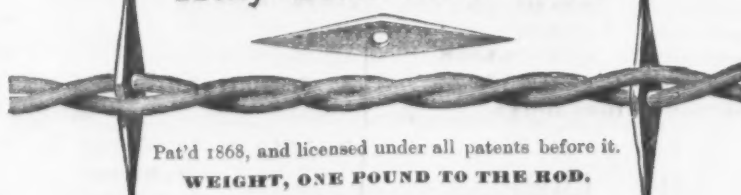
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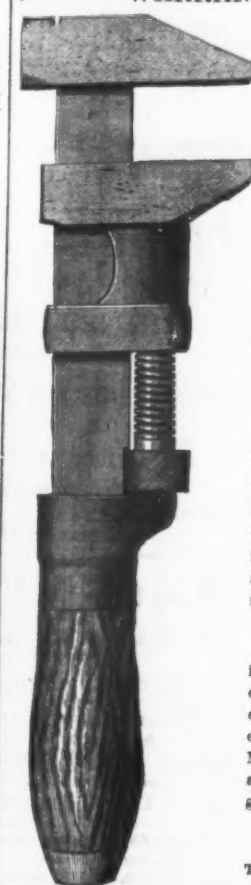
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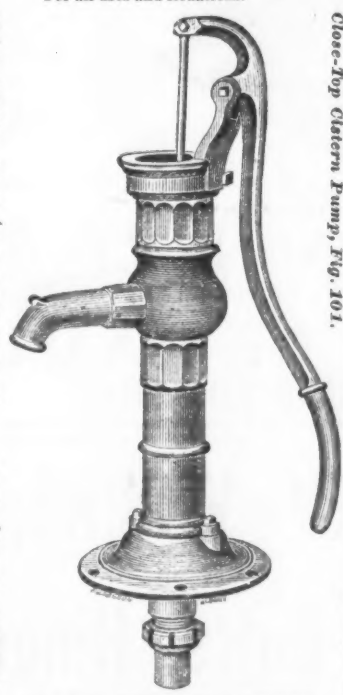
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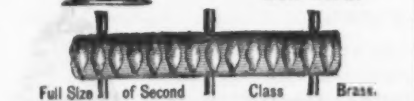
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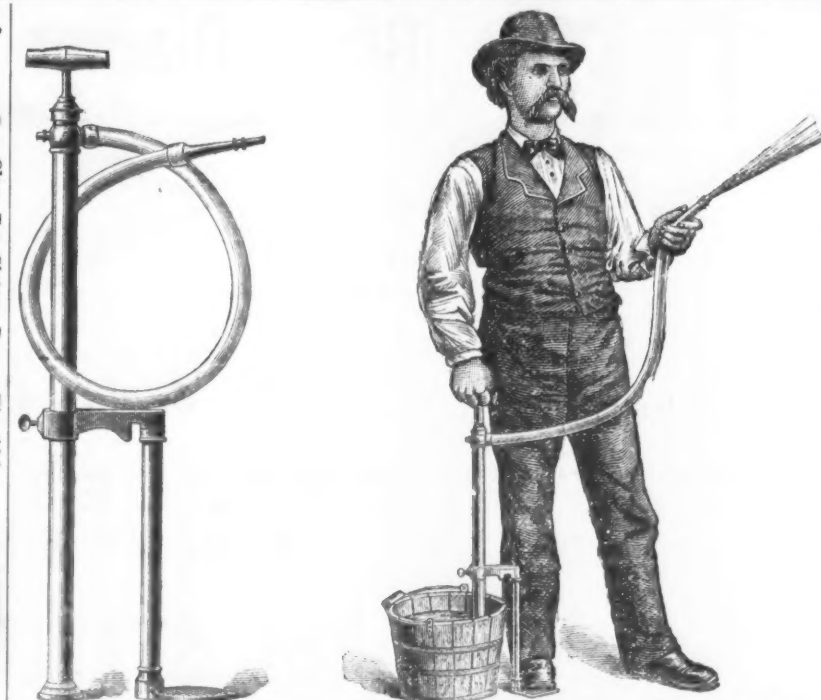


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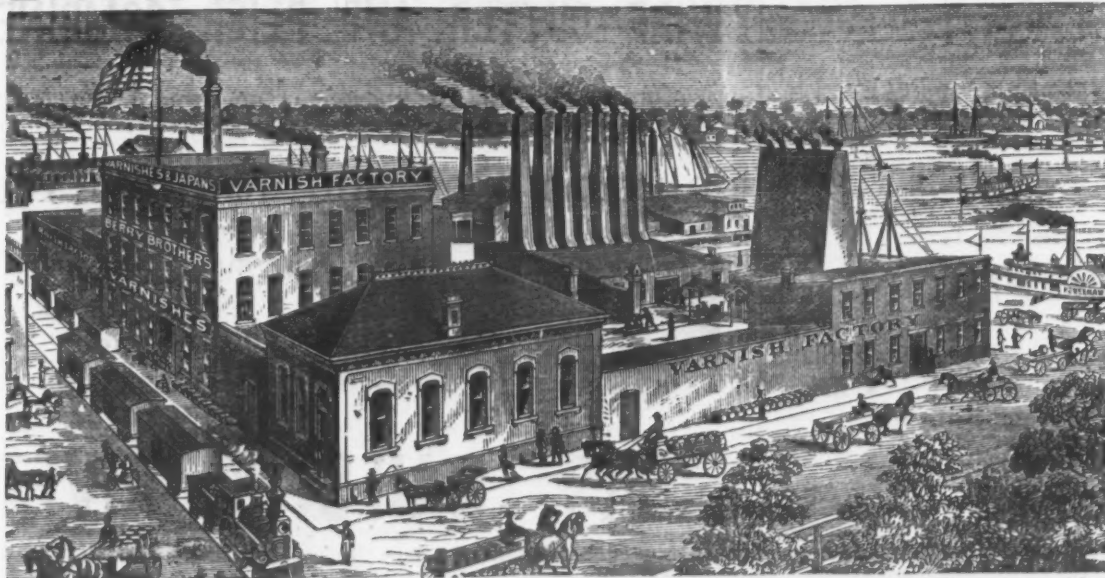
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two file-like bones at the tail. From this it will be seen that the *teredo* cuts timber for food and not as a burrow. Mr. Putnam also noticed that, on coming in contact with timber not suitable, it retracts one-fourth, more or less, of its length, and abandoning its old cell, cuts a branch in another direction, always taking care to build a large dam or wall across the entrance to the abandoned cell. Three different branches have been cut by the same animal.

Early in March a few animals may be found which have just entered the timber. As the season progresses the number which have just entered increases until the first of October. From that time the number decreases rapidly until the last of November. Through December and January none are found. Having entered the timber they grow in length about 2 inches a month. In February and March the largest animals are found. During April the large animals all disappear, and only the smaller ones up to 4 or 6 inches in length remain. Clear, fresh water does not appear to be necessarily destructive to them, as the water of the bays along the coast has been fresh enough for good drinking purposes by reason of heavy and continual rains for two or three months, and yet they appeared healthy and vigorous. It has been supposed that the *teredo* leaves the timber in search of other fields. This probably comes from the sudden disappearance of large numbers in the spring. As they are attached to the shell so firmly as to exclude the entrance of water, they can no more leave it than can the oyster its shell. Having fulfilled their mission they die, and from their soft, boneless construction, they rapidly decompose and are washed away, leaving only their shell and cutters.

The rapid destruction of timber in exposed situations by decay, and the ravages of land and marine animals, have led people in every age to devise measures to prevent such waste of time and means, and render their works more enduring. Perhaps the only preparation that has stood the test is a hydro-carbon, a product of the destructive distillation of coal. About the year 1835 experiments were begun with this product, usually called creosote or dead oil. It is rich in phenols, but its greatest ingredient is naphthalene. In the scramble for work, and from a mistaken idea that cheapness of construction is economy, as well as by errors of judgment, much defective work has been done. In some cases such work has given partial satisfaction by increased length of service, while in others the additional outlay has been entirely thrown away, bringing disrepute upon all classes of creosoted timber, which, while valuable in the use of untreated timber, should be set aside in the use of creosoted material. For instance, in ordinary timber-work for exposed situations, compact, solid heart timber is usually specified, and the cutting and framing, more or less, done on the ground.

Such timber, if treated, will prove difficult to saturate. The soft and unripened growth, or sap-wood, more readily absorbs oil, and becomes the more durable. The more porous and destructible classes of timber now considered nearly worthless, will, when creosoted, become the most valuable. Fir, swamp ash, and old field pine, when treated, will outlast the best white oak, yellow pine, or cedar uncreosoted. In ordinary use the heart of yellow pine will more than six times outlast the sap-wood. Mr. Putnam states that he has at West Pascagoula pieces of yellow pine, the sapwood of which was partially saturated with creosote oil in October and November, 1872, and which since then have been exposed to contact with the earth and unfavorable climatic conditions. Such parts as received oil are as perfectly sound as when cut from the stump, while the untreated sap, and a considerable part of the heart, are entirely rotten. Timber which, untreated, would decay in one season, will remain in closely packed piles or on the ground, in the most unfavorable conditions, perfectly sound for years. As far as practicable all cutting and framing of timber should be done before treatment, except in open, porous timber, which has been thoroughly saturated. Holes for bolts may be made if they are fitted so as to exclude water. Ordinary building timber will not be thoroughly saturated, and too much care cannot be taken in this respect.

From what he has seen of creosoting, he considers timber which has been saturated with coal-tar oil practically indestructible, and as durable as iron or stone. There is a property in the oil which prevents fermentation and the change which we call decay. How much oil per cubic foot of timber is necessary to produce this result has not been determined. If a small quantity—say 5 to 10 pounds per cubic foot—could be evenly distributed through the stick, it might be sufficient. But as the oil first comes in contact with the outside of the timber the central part will receive none until the outside has become thoroughly saturated. No method is known by which a given quantity of oil less than the total amount which would be absorbed by timber can be so distributed as to reach every part. The amount which can be forced into timber varies from 8 to 40 pounds per cubic foot. This last amount can only be forced into very light and porous timber. The unequal results from creosoting timber probably come from the unequal distribution of the oil.

As a defense against the ravages of the *teredo* *navalis*, or ship worm, coal tar oil is invaluable. It is deadly to cold blooded animals. A small quantity stirred in a pool where there are fish will kill them. Mr. Putnam has placed pieces of treated timber in water where the worms were abundant, and, though rapidly entering other timber, they would not touch that which had been creosoted. He has taken pieces of timber, and saturating a part of each one, has left the remainder free from oil. The *teredo* would enter and destroy the untreated parts and perish for want of food, leaving the treated parts perfectly good. Wherever it came in contact with the creosoted wood it turned away.

The trustees for the bondholders of the New Orleans and Mobile Railroad had become so thoroughly convinced of the value

of coal-tar oil as a preventive of decay in timber—which takes place rapidly in the long, warm seasons of that latitude, and of the ravages of the *teredo*, which is abundant and destructive to the numerous and long bridges which cross the bays and inlets along their line—that they decided in the winter of 1874-5 to creosote the piles and timber used in bridge construction. As no works could be found in this country treating timber thoroughly enough to be satisfactory, it was thought advisable to build machinery and do the work on a plan different from any then in operation. Accordingly, works were erected at West Pascagoula, Miss., at a cost of about \$50,000, and all the bridges and water-ways on the road have been constructed of creosoted timber, except the long spans of trusses, which are of iron. The work has been eminently satisfactory. Pile piers have been built which bid fair to outlast their iron superstructure.

These works contain two reservoir tanks for storing oil, placed in the ground; two tanks for treating timber, 6 feet diameter inside by 100 feet long; a large tubular condenser and pump for supplying it with water, a large vacuum pump, an oil pump, a powerful force pump, a hoisting engine for handling timber, a pair of boilers capable of furnishing the required steam and a superheater. These are all connected by the requisite pipes and valves. Each treating tank contains nearly 5000 feet of 1-inch pipe arranged in coils, through which superheated steam is passed for seasoning timber, and also iron rails upon which cars loaded with timber are moved in and out. Both heads of the treating tanks are movable. At suitable distances are transfer derricks for loading and unloading timber. A large number of piles, 90 and 95 feet long, have been handled with them. In work, piles are cleaned of dirt and bark, butted and sharpened, and timber cut and framed, ready to be put in position. It is then loaded on iron cars built for the purpose and hauled into the tank. Steam is then turned in through a perforated pipe extending along the inside at the bottom of the tank. This is continued until the timber has become heated through. The vapor is then condensed and a partial vacuum produced. Superheated steam is passed continually through the coils of pipe to vaporize the sap and moisture contained in the timber, and as fast as vaporized it is condensed. A partial vacuum being maintained, the moisture vaporizes at a low temperature, and the seasoning proceeds rapidly. When the timber has become properly seasoned, the tank is filled with oil, and a pressure applied by means of the pressure pump of from 150 to 200 pounds per square inch. This pressure is maintained until the pressure gauge remains constant, showing that the timber will absorb no more oil. The oil is then drawn off, the load drawn out, and another load, which has in the meanwhile been prepared, drawn in and the process repeated. The consumption of oil by this process has usually been from 12 to 18 pounds per cubic foot, or from one and one-fourth gallons to two gallons per cubic foot. Over three gallons per cubic foot have been injected in some loads. The main features of this plan of treatment are the extraction of the sap or moisture in the timber to prevent fermentation, and also to provide room for oil. Timber can no more be steamed dry than it could be seasoned by boiling. The timber, being cooler than steam, would condense and absorb it, thus accumulating moisture. Water cannot be drawn out of timber by a vacuum alone. If timber retained its moisture by atmospheric pressure, then, by removing such pressure, it would flow out. But moisture is retained in timber by capillary attraction, which is left in full force when atmospheric pressure is removed. The timber is steamed to heat it through as being the simplest method of conveying heat; the steam is then condensed and pumped out, the air producing a partial vacuum. It is well known that water vaporizes in a vacuum at a low temperature. While under pressure the degree of heat at which it vaporizes rises to correspond with the pressure applied. By maintaining a partial vacuum it is possible to vaporize the moisture rapidly, and at a temperature which will not injure the timber. When the pressure is removed by condensation, the heat absorbed by the timber during the steaming expands the moisture by vaporizing and drives it out. Superheated steam is passed through the coils of 1-inch pipe in the treating tank to maintain the temperature and assist in vaporizing the moisture, and as fast as vaporized, the moisture is drawn away by the condenser. This process is continued until the timber has become satisfactorily seasoned, when the tank is filled with oil and a pressure of from 150 to 200 pounds per square inch is applied until the timber will absorb no more oil.

It is now nearly four years since the construction of bridges with creosoted timbers was commenced, and during that time not a fire has caught in the new work from passing trains, while on bridges constructed of uncreosoted timber watchmen were a continual necessity.

It is customary for the glass manufacturers—especially the window-glass and green-bottle manufacturers—to shut down during the hot months. Indeed, the workmen in the bottle-glass houses refuse positively to work, even at extra wages. This year the window glass houses will close for three months from July 1, partly to reduce production and partly to make repairs, and the bottle-glass manufacturers for two months. The flint-glass manufacturers, at their meeting last month in Philadelphia, appointed a committee to endeavor to secure a general stoppage for one month in the three months beginning July 1. All but two factories have agreed to this. It seems that some of the evils that affect the iron trade are experienced in the glass business. During the advance, French and Belgian manufacturers shipped large quantities of window glass to this country and overstocked the market. The price has been reduced, and now the oversupply must be exhausted. The flint-glass trade is suffering from overtrading. The jobbers overstocked themselves, and manufacturers now must wait till the stock in the hands of the jobbers is worked off. The green-bottle and fruit-jar trade is the

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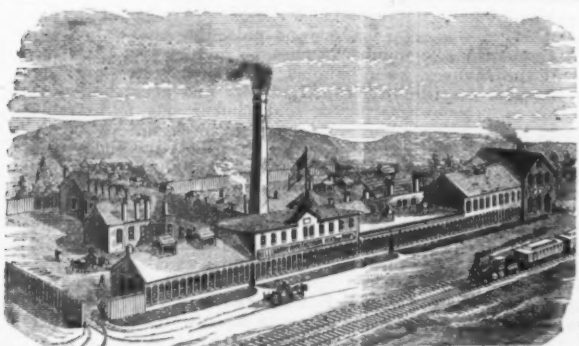
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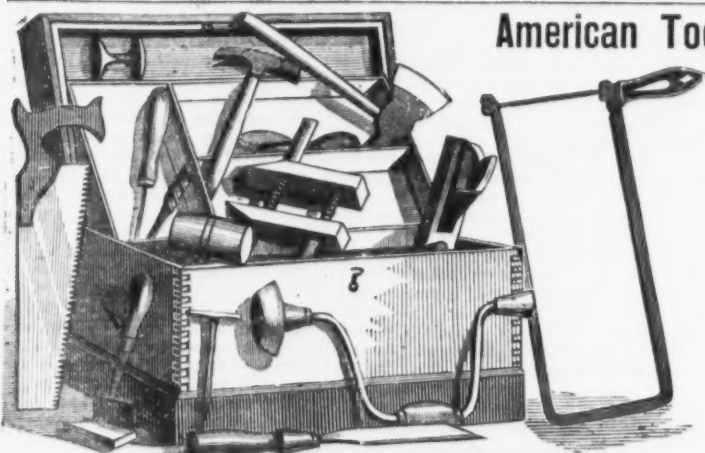
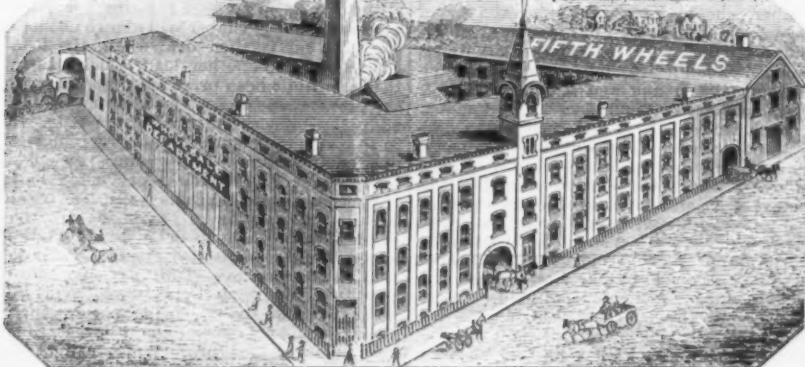
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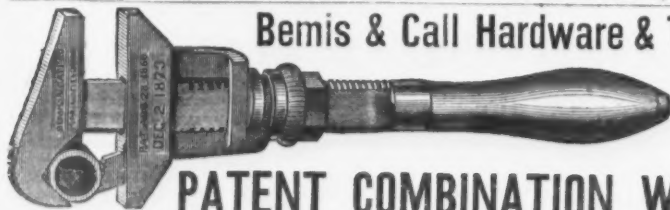

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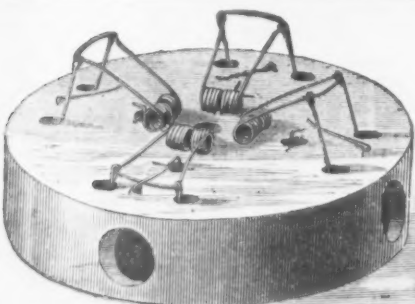
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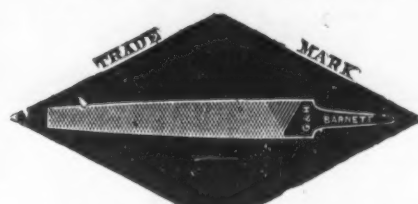
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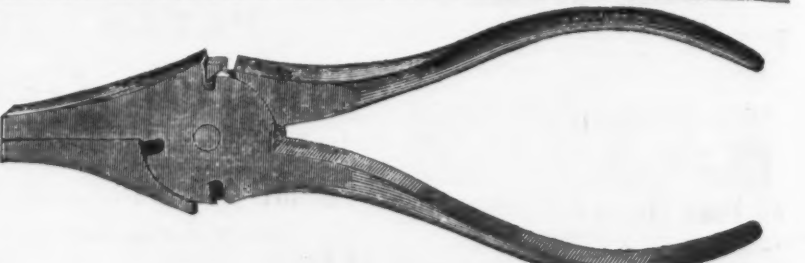
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"WIRE CUTTER AND PLIER COMBINED."

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This is the most successful Rat and Mouse
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MANUFACTURERS OF

AMERICAN AND FRENCH WIRE NAILS, TACKS, SHOE NAILS, And Every Variety of Small Nails.

Offices & Factories at Taunton, Mass.

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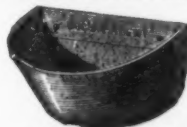
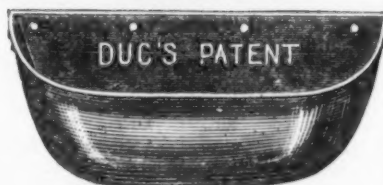
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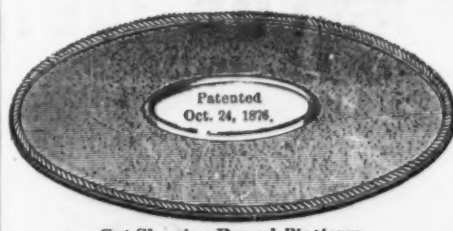
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27, 30, 32, 34, 36 inch.



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Manufactured of heavy metal, requiring no nailing or lining, the edge retaining its form. Superior pattern, finish and quality. Price as low as any.

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Packed 12 in each case.

STOVE RESTS are designed to place under the feet of Stoves and Ranges, for the purpose of raising them from the floor or platform. They are about 3/4-inch thick, covered with sheet metal in zinc, brass and nickel plate. Highly polished and finished. Packed one set of 4 pieces in each paper box, and 36 sets in each case. Sizes (inside of circle on top)

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Communications by letter will receive prompt attention.
Jacks for pressing on Car Wheels or Crank Pins made to order.EVERY
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is drawn down to a point from the rod, thus:

It is the only Hot Forged and Hammer Pointed Horse Shoe Nail, made by machinery, in the World.

Some other manufacturers claim to make a hot forged Nail, but you will observe on all such a sheared edge near the point.

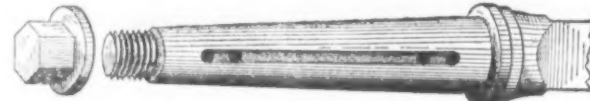
P. O. Address, Neponset, Mass., U. S. A.

THE PUTNAM NAIL CO., Boston.

only one that is in a good condition. The manufacturers are full of orders for beer bottles and fruit jars, and prices are fully 100 per cent. above last year. They would like to run, but the union will not permit it.

An Improvement in Axles.

The accompanying illustrations represent Dr. J. H. McLean's improved axles for carriages and wheel vehicles of all kinds. Fig. 1 is a top rim of the axle and Fig. 2 a section through the arm of the holes. This axle has two peculiar features. The first is a slot along the whole top and a similar one at the bottom, as is shown in Fig. 1. The second is that at the ends of these slots there are holes passing clean through the axle. At first sight it might seem that this construction was not likely in any way to alter the action, unless to cause it to cut a little faster on account of a reduced bearing surface. Practice, however, shows that the reverse is the case. The greater portion of the friction and wear in use in ordinary axles arises from two causes—the presence of sand and dirt in the box, and the pressing out of the oil from between the bearing surfaces. No dust caps, however well fitted,



An Improvement in Axles.—Fig. 1.—Top View of Axle, showing Slot and Holes for Lubrication and Removal of Dirt.

are able to keep out the dirt, and from experience we think it safe to say that with ordinary wagons the squeezing of the oil from the bearing is constant. No matter how carefully the box may be adjusted, the constant motion seems to grind the oil or grease down and then force it out in a very short time.

Dr. McLean's improvement divides the surface into two portions, and instead of making a whole revolution necessary before any portion of the box can get a fresh supply of oil, he arranges the slot in such a manner that just as the point of greatest pressure is reached all the pressure is taken off and a new supply of oil given. At the same time the second edge of the slot answers another and very valuable purpose in wiping off and arresting the particles of grit which would otherwise be carried continually around the axle, cutting at each revolution and perhaps bedding themselves in the metal so as to become constant cutting tools. This action is very marked in light carriages when the dirt and sand comes up through the holes shown in Fig. 1, in long worm-like rolls. The slot gives the bearing surfaces a rest once in each revolution.

It is a well-known fact among machinists that a crank-pin will run cool with many times the pressure upon it which would cause an ordinary car journal to heat. Thus with steel pins, engines have been run with as much as 1200 pounds per square inch upon them and worked well. A car bearing, however, is not safe with 350 pounds per square inch. This difference is largely due to the fact that the crank-pin is rested, as it

deteriorating the quality of the plate so that buyers could not dispose of them except at second-quality prices. After the makers saw the mistake they had made and abandoned the new process for the old one, it was some time before the brand regained the position it had lost. Pontynwydd (excuse spelling, as my early education in Welsh orthography was neglected) was at one time one of the worst brands of charcoal tin made; the last lot of the same brand I saw was of first-rate quality and could be classified with "Allways" grade. The brand of coke tin called "Lantwit" should be changed to "Chameleon," it changes its color so often. These three are makers' brands, and I could extend the list indefinitely.

But all this discussion will amount to nothing if it does not result in finding a way out of the difficulty of consumers being obliged to accept and use an article inferior in quality to that which they order and want. How can the evils complained of be remedied? The impracticable idea of abolishing the practice of using and selling private brands—which, as the statement you have published shows, outnumber makers' brands four to one—will not, for the reasons I have advanced, accomplish the desired ob-

ject, and some other method must be adopted. The best plan, when a buyer is in doubt about the quality of tin plates, is to follow the example of bakers, who, when they want to buy flour, do not depend upon the marks or words on the barrel, but judge what the quality is by sampling and testing the contents. This method, of course, can only be adopted by parties whose places of business are accessible to the warehouses of the dealers. For parties residing at a distance, accustomed to order their supplies by mail, a little care exercised when making out and wording their orders will be all that is required. With my knowledge of the quality of tin plates I would adopt the following formula for making out my orders, if circumstances obliged me to obtain my supplies by mail:

1. If I wanted the very best and highest-priced charcoal tin that is made for the luxury of having an article used by a few people, I would order M. F., Pontymister, Dafen, or fully equal.

2. For deep stamping, K. C. B., or fully equal.

3. For planishing or making the very best quality of tinware, P. S. & Co., Melyn, E. C. C., V. S. St. George, Pontartawe, Osier-Bed, Tregoning, or fully equal.

4. For an excellent quality of tinware, Gwendreath, Allways, Parkend, R. G. Machen, L. P. L., Comfelin, or fully equal.

5. For common work, where the tin is not put to a severe test, Dean, Vole, Abercarno, or fully equal.

6. For the very best quality coke tin, equal to many brands of charcoal, A. B., A. Z., or fully equal.

7. For an excellent quality coke tin, Landore, Llanfair, Osborne (diamond), Ys-pitty, or fully equal.

8. For a good quality coke tin to make cheap tinware, such as fruit, lard, paint and other packing cans, C. F., Abertawe, Celyn, Gelly, Glais, Cynon, B. V., I. B., Carne, or fully equal.

9. For common coke tin, Y. B. C., Lantwit, or fully equal.

10. To fill an order for the man who says tin roofs are not laid off as good stuff as they formerly were, and who is willing to pay the price for the very best charcoal tines, M. F., or fully equal.

11. To make an excellent roof, STP, L. Gwendreath, Allways, Parkend, Dean or Cambria tines, or fully equal.

12. For second-quality roofing, A. Z., or Abercarno tines, or fully equal.

13. To fill an order for the party who don't care what the quality is so long as the roof is put on for a low price, B. C., or Budds tines, or worse.

Now, if a dealer fills an order written as above, by substituting another brand for the one called for, a warranty that the quality is the same is implied, the transaction partakes of the nature of a contract, and he becomes liable, legally and morally, for whatever loss the buyer may sustain, if it can be established beyond question that the substituted brand is inferior to the known quality of the plate ordered. If the buyer can prove that the plate is not fully equal to either of those mentioned in his order, two courses are open to him; he can hold the plates subject to the order of the seller, or if he can use them for a purpose that allows an inferior quality, he can make a claim for the difference in price. The buyer, however, must be certain the inferiority is actual and not imaginary, because the seller must have some protection against the tendency of some people to find fault and indulge their whims regardless of the rights of others. The dealer or importer does not suffer any loss by paying such a claim, provided the quality is not up to the grade he supposed it was, for the reason that he can make a reclamation on the parties of whom he purchased the plates, manufacturers or whoever they may be. When these claims are reasonable, and are made to cover the actual and not fanciful loss sustained, no honorable firm will refuse to allow them. Suppose such a claim is refused, what then? There is only one course to pursue—put a black mark against the name of the firm, and refuse further dealings with them.

A committee appointed in 1876 and presided over by M. Dumas, have reported to the French Chamber of Deputies in favor of granting the first Volta prize of 50,000 francs to Prof. Graham Bell of telephone fame, and the second prize of 20,000 francs to M. Gramme the well-known inventor of the dynamo-electric machine bearing his name. The first one to receive this distinction was Ruhmkorff.

A Remedy for the Evils of Private Brands.

Mr. Thomas M. McCann, in a letter on this subject, discussed at some length in our Editorial Columns, says:

I admit that the quality of private brands varies, but not more so than makers' brands; more especially is this true of coke plates. The fault, however, does not lie at the door of the importers; they are not the makers of the plates, nor can they examine every box and sheet that comes into their warehouses. The evil is the result of careless and hasty assorting, and selecting the sheets after they are made on the other side. This is an abuse that can and ought to be remedied. To prove what I assert—that makers' brands vary in quality to the same extent as private brands, I may mention that some years ago the makers of that favorite brand of charcoal tines, STP, introduced a new process of manufacturing into their works, which resulted in rapidly

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FRIEDMANN & LAUTERJUNG,



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PEN AND POCKET CUTLERY,
Solid Steel Scissors, Shears, Razors, &c.

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"ELECTRIC RAZORS,"
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Fine Plain and Ornamental Metal Patterns made
to order at our new foundry, Knowlton St., E. D.
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It having come to the knowledge of
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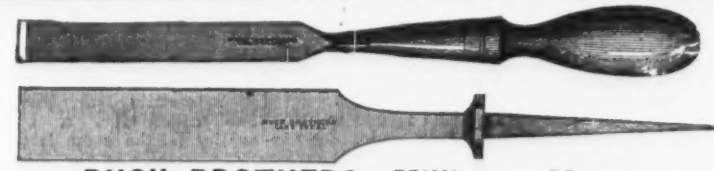
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BALL'S PAT. SOLID STEEL SHEEP SHEARS.

These shears are unsurpassed for cheapness, dura-
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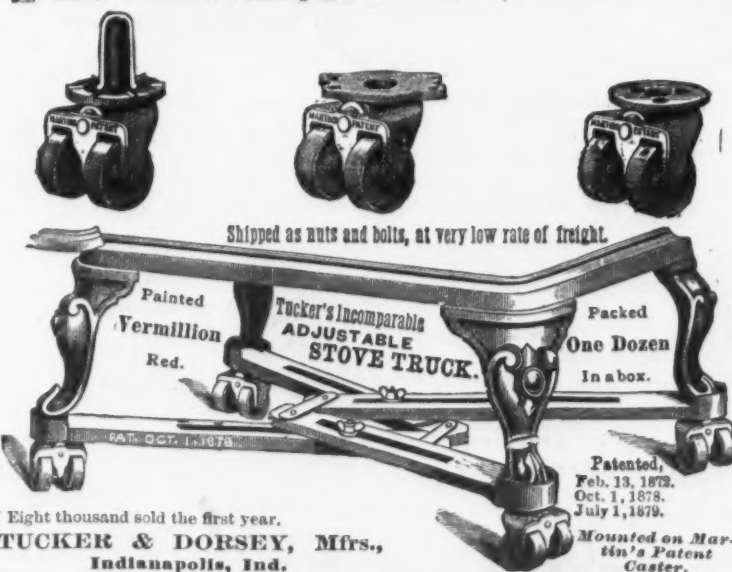
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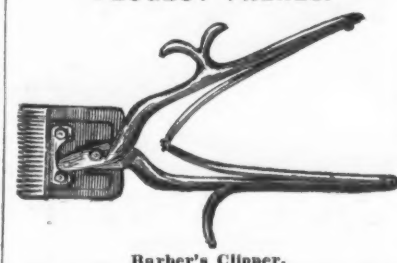
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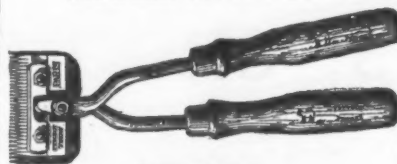


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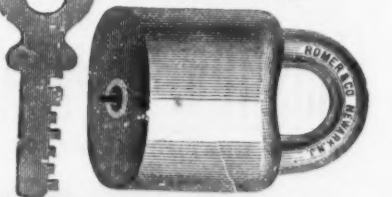
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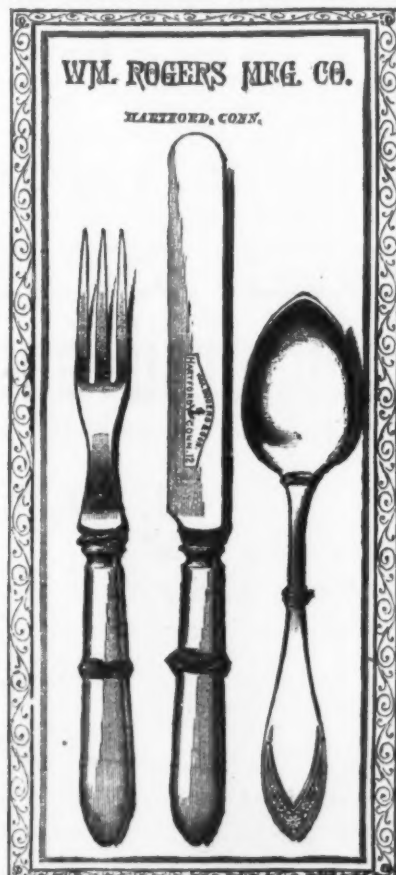
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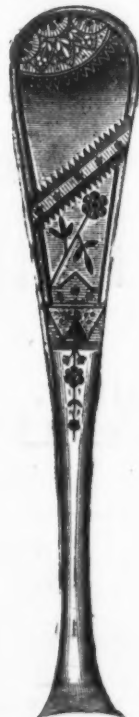
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FORKS, SPOONS, Etc.,

Manufactured from Cast Steel, Plated with Nickel and Silver.

WALLACE BROTHERS, Wallingford, Conn.

HOLMES, BOOTH & HAYDENS,

MANUFACTURERS OF

Finest Quality Silver-Plated Spoons, Forks, Knives, &c.



NOTICE.—We guarantee the base of our Spoons, Forks, &c., to be full 18 per cent. Nickel Silver, and extra heavily plated with pure Silver. Our goods are all hand burnished, and are first-class in every respect. We pack our Spoons and Forks one dozen in each box.

49 CHAMBERS ST.,
NEW YORK.Factories,
WATERBURY, CONN.18 FEDERAL ST.,
BOSTON.

INDUSTRIAL ITEMS.

NEW HAMPSHIRE.

Among Manchester's heavy taxpayers are the following manufacturing concerns, with their respective amounts: Amoskeag Manufacturing Company, \$49,287.70; Manchester Locomotive Works, \$2388.72; Gaslight Company, \$2813.48.

MASSACHUSETTS.

The new tack manufacturing concern at Sandwich takes the name of the Bay State Tack Company. The factory is well under way.

The finishing touches are being made to the roof of the addition which Buchanan, Bolt & Co. are building to their wire works at Holyoke.

H. C. Spaulding, of Boston, and Oliver Warner are arranging for a wholesale experiment in lighting Holyoke by electricity. The apparatus will be run with power from the new wheel-pit which the water-power company are going to put in for their Cabot street mills. A tower will be built 200 feet high in some central locality, and the experiment will be to see how much of the city can be lighted. Mr. Spaulding is very enthusiastic on the subject, and has already tried the whole thing in other places so successfully that he hardly calls it experimental now. He wants eventually to have Holyoke adopt the system, and says that with seven such towers as he proposes to build he can make the whole city as light as day, both indoor and out. He asks for local aid to the extent of \$15,000, which he seems in a fair way of obtaining.

CONNECTICUT.

Work on the Chapinville Furnace is being pushed rapidly forward. The four piers are finished, and the brick arches are fast nearing completion.

NEW JERSEY.

The National Window Glass Association will hold a meeting at Cape May on July 14.

PENNSYLVANIA.

No. 1 Blast Furnace of the Lackawanna Iron and Coal Company, in blast one year, April 2, 1880, made during that time 23,963 tons 16 cwt. 3 qr. 24 lbs.—weekly average of 460 tons 16 cwt. 3 qr. 12 lbs., on an average percentage yield of ore, 50.49. The above is claimed as the largest year's yield ever made by any one furnace in the anthracite region. The steel works made last week the largest yield yet made in any one week, viz., 2553 tons 18 cwt. of ingots. Exceeding any previous week's work by over 100 tons.

The first rail on the new Cambria and Somerset Railroad was laid on Monday morning, the 21st ult. The track laying was commenced in Johnstown.

Windsor Furnace, at Leesport, Berks County, which was destroyed by fire recently, has been repaired, and was to have been blown in last week.

The Norristown Furnace of Jas. Hooven & Sons went out of blast on the 20th, on account of the condition of the iron trade.

The Enterprise Machine Works, Philadelphia, have opened their new manufactory and begun the manufacture of the Rich & Morrison gas consumer, for use in puddling and heating furnaces.

The failure of Charles F. Shoener, a well-known business man and coal operator of Philadelphia, and proprietor of the Greenwood Rolling Mill and Shoener & Allen's machine shops at Tamaqua, is announced. Inquiry at his office revealed that the machine works at Tamaqua were closed June 24 under a Sheriff's execution, and that the closure is for an indefinite period. As yet no statements of the assets and liabilities have been made, but it is understood that the latter are heavy. Mr. Shoener has not yet decided what steps he will take, whether to effect a compromise with his creditors and continue the business, or allow the property to pass from his hands. The failure was brought about by the depression in the iron trade, aggravated by the suspension of the Reading Railroad Company. It is also stated that the Coleraine Furnaces, owned by Mr. Shoener, have closed.

Work at the new glass factory at Monongahela City still goes actively on; 150,000 feet of lumber will be used in the buildings. The enterprise is being pushed with great vigor.

The combined anthracite coal interests at a meeting in Philadelphia on Thursday, the 24th ult., decided to continue the present plan for restriction, by working three days alternately in each week during the month of July.

The Mt. Hickory Furnace, it is expected, will be started again in a few days, as the work of getting ready is now going on.—*Sharpsville Advertiser.*

The Baldwin Locomotive Works, Philadelphia, are now employing 2750 men, all working as full time as the weather will permit. During the past half year they have turned out the largest amount of work ever done in the same time. Upward of 260 locomotives have been sent out in six months, and the orders already entered warrant the assertion that the last half of the year will show a still further increase on what they have hitherto been able to accomplish. During August they will ship 12 locomotives to Australia, besides street motors. They have quite a number of orders under way, including 4 for Brooklyn, 6 for San Francisco and several for other cities. Indications seem to show that in the immediate future there will be a larger business in railway equipments than has ever been known.

Selden G. North, the well-known manufacturer of the universal lathe-dog, in connection with his brother, Ralph H. North, has leased the foundry formerly run by Barnett Le Van at Twenty-third and Race streets, Philadelphia. They intend making a specialty of fine light castings, and will no doubt command a large trade. The firm name will be North Brothers.

PITTSBURGH AND VICINITY.

Park, Long & Co., of the Vulcan Forge, in a card dated June 22, announce that they have disposed of their tool department to the Iron City Tool Works, Limited. The latter company will continue the manufacture of picks, vises, sledges and heavy hardware.

The steamboat transfer of the B. and O. Railroad Company across the Monongahela River, in the 23d ward, has opened up an immense business with the Pittsburgh and Lake Erie line, upward of 100 cars per day being transferred. The cars represent a large number of roads, including the Chicago and St. Paul, New York, Ohio and Pennsylvania, Erie Dispatch Line, White Line, Red Line, Hocsac Tunnel Line and numerous others. The cars westward bound are principally loaded with coal and coke, although limestone, glass sand and other materials are transported in large quantities.

The Keystone Bridge Company has been awarded the contract for erecting a new iron bridge across the Monongahela River for the Panhandle Railroad, just where the present one is. The change is caused by the increasing business of the road and the need of double tracks, which will be laid upon the new structure. The superstructure will be ready to put up in two months. When this is ready it will only take about a week to place it in position on the piers. While this portion of the work is being accomplished, the trains on the road will pass over the river on the trestles, or "false" works, expressly arranged for that purpose.

The South Side window glass factories will nearly all shut down this week and remain idle for the summer. Many of the flat glass houses give their employees a week's vacation before the 4th, and improve the time by making necessary repairs.

Mr. H. D. Murray, for a number of years actuary of the Western Flint and Lime Glass Association, has resigned his position, and will hereafter be associated with the new Phoenix Glass Co., at Phillipsburg.

The Plunkett Glass Works, on the South Side, is in the list of sheriff's sales. The lease of the Plunkett Glass Company, who have been running the works lately, is therefore brought to a sudden ending, and the large stock of chimneys on hand will have to be disposed of at once.

At George Duncan & Sons', South Side, the old factory is fast disappearing and a new one is taking its place. The workmen are getting along well with the furnace, which is about ready for the bricklayers.

WEST VIRGINIA.

A distressing accident occurred at the Riverside Blast Furnace, of Wheeling, on June 24. The men were engaged in working about the blast when part of the bosh fell in, scattering the metal in all directions. Frank Hearne, the manager, was seriously burned, with six others, two of whom are not expected to recover from their injuries. The Benwood Mill has shut down in all departments for a stop of three weeks.

OHIO.

The Buckeye Glass Works at Martin's Ferry shut down on the 19th ult. for two weeks. This company is giving considerable attention to the manufacture of glass torches for the coming campaign. A large shipment of these has recently been made to Chicago.

The Steubenville Furnace and Iron Company have leased their furnace for three years to F. Bates, of Cleveland, who will begin repairs immediately, preparatory to starting up at the earliest possible date.

The mill of the new Wellsville Plate and Sheet Iron Company was to have made a trial run on last Monday, the 28th ult. The company propose starting up for business on the 6th inst.

Beatty's Glass Works, at Steubenville, are still in operation, but will probably shut down soon. Their new Nicholson Furnace is very nearly completed.

Alice Furnace, at Ironton, generally known as "Big Etna," is expected to start up some time in July.

Belfont mill and nail factory, at Ironton, were to have shut down last Saturday, the 26th ult., for a few weeks.

A meeting of the Ohio River Railway Company directors was held at Ironton last week, at which a proposition for building the road was made by Mr. W. W. Franklin, of Columbus. He proposes to put the road in first-class order and equipment, and have the cars running through from Columbus to Ironton by January 1, 1881. The consideration he will receive is \$400,000 in bonds and \$500,000 stock in the road. This proposition was conditionally accepted.

The Bellaire Window Glass Works are shut down, and are engaged in pushing their new works to completion. They will start September 1st with a capacity almost double that which they now have.

Advices from Dayton state that on the morning of June 22d the gauge of the New York, Pennsylvania and Ohio Railroad was changed from broad to standard gauge. Twenty-five hundred men were placed along the line from Dayton to Lewisburg, a distance of 225 miles. Work was begun at 3 o'clock, and the last spike was driven at 9:30 a. m.

Mr. James L. Edwards, the superintendent of the Ward Iron Company's Old Mill, at Niles, and others, have purchased the Dover Iron Mill, at Canal Dover. It was built in 1871, but never was much operated. The machinery is nearly new. These works have eight boiling furnaces, of 16 tons capacity daily; one heating furnace, 20 tons; one muck train, also one 10-inch guide mill. Will make round, square and flat in all sizes. Messrs. J. L. Edwards & Co. (the new firm) expect to commence running on the 21st, and have several orders already booked.

The Belmont Glass Works at Bellaire is working now with only one furnace, the other being out for repairs. The company will probably close up during the first two weeks of July.

The Cleveland Industrial Machine Company have recently opened an office and works at No. 60 Merwin street, for the manufacture of all kinds of machinery, but are especially engaged on engines and elevators. They are very busy at this time.

The Union Rolling Mill Company, a newly-organized company for manufacturing iron, have located their office at 127 Superior street, Cleveland. S. W. Session is president; A. S. Upson, vice-president; and S. A. Fuller, treasurer and manager. Their mills, formerly operated by the Union Iron Works Company, are located at Newburg, and will soon be started up.

Messrs. Wm. G. Fisher & Co., of Cincinnati, made a fine display of the working

H. D. SMITH & CO.,

Plantsville, Conn.,

Manufacturers of the

BEST QUALITY CARRIAGE MAKERS' HARDWARE.

Manufacture the Largest Variety of Forged Carriage Irons of Best Material and Workmanship.

PRICES LOW FOR QUALITY OF WORK FURNISHED.

SEND FOR PRICE LIST.

SARANAC HORSE NAIL CO.

Polished or Blued Horse Nails, Hammered and Finished.

The Saranac Nails are hammered hot and the finishing and pointing are done cold. Quality is fully guaranteed. For sale by all leading iron and hardware houses.

S. P. BOWEN, President and Treasurer.

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PLATTSBURG, N. Y.

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17 and 19 Maiden Lane.

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AMERICAN BREECH LOADING
ENGLISH " "
BELGIAN " "

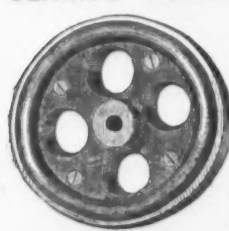
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CHEAPEST AND BEST GRADES.
ENGLISH MUZZLE LOADING
BELGIAN " "
FLOBERT RIFLES, Plain and Remington System.

BRITISH BULL DOG REVOLVERS, 38, 44 and 45 Calibre.

Agents for COLT'S and ROBIN HOOD line of REVOLVERS, BRIDGEPORT GUN IMPLEMENT CO.'S GOODS, UNION METALLIC CARTRIDGE CO.

CLARK'S RUBBER WHEELS.



This wheel is the best now in the market, and is attracting the attention of large manufacturers on account of the great saving of floors, which is ten times greater than the extra cost of this wheel.

Adapted to all purposes, viz. Warehouse trucks, platform trucks, scales, boxes, baskets and heavy casters. For full particulars see the first issue of The Iron Age next month, or address

GEO. P. CLARK, Windsor Locks, Conn.



562 Washington St., Buffalo, N. Y.
Larger sizes proportionately low in price. Extra for Double Brass Beam, \$5; for Weeks' Patent Combination Beam, brass, nickel plated, \$10. Order of us and save expense of agents and commissions. The cheapest, and with Combination Beam the best Scale in the market. Every scale warranted accurate and durable.

WEEKS & RAY, Proprietors.

ANCHOR BRAND
AXLES.

For all Styles Carriages and Wagons.

Annual production 120,000 sets.

SHELDON & CO., Auburn, N. Y.

CLARK'S PATENT HAIR CUTTING MACHINE.

This machine is warranted to make a clean cut, is easy in its operation, and has been before the public for many years, giving the highest satisfaction to all who use it.

To be obtained wholesale from

MESSRS. MOSEMAN & BRO.,

128 Chambers St., New York.

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221 Spruce St., Philadelphia, Pa.

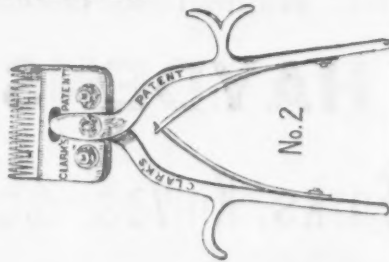
Messrs. FIELD, LEITER & CO.,

Madison and Market St., Chicago.

And all Merchants in the United States, and of the Patentee,

W. CLARK, 232 Oxford Street, London.

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Iron and Brass Wood Screws.

We manufacture a full line of
IRON AND BRASS SCREWS.

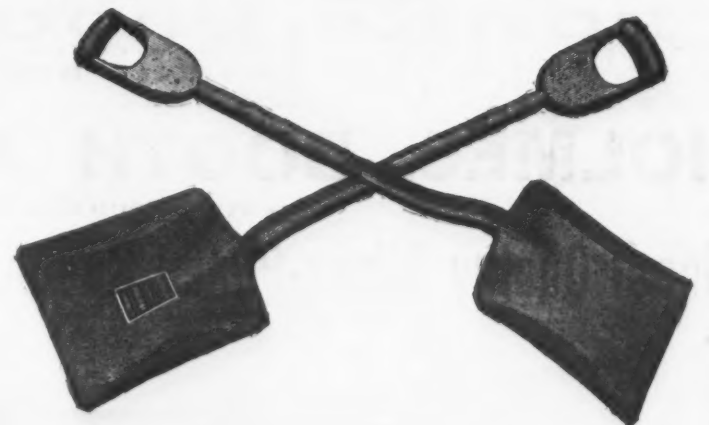
Quality, finish and tests as to strength, guaranteed equal to any in the market.

With improved facilities and largely increased capacity for production, we can fill orders promptly, and invite inquiries for discounts.

Philadelphia Screw Co., Limited,
Twelfth and Buttonwood Streets,
PHILADELPHIA.

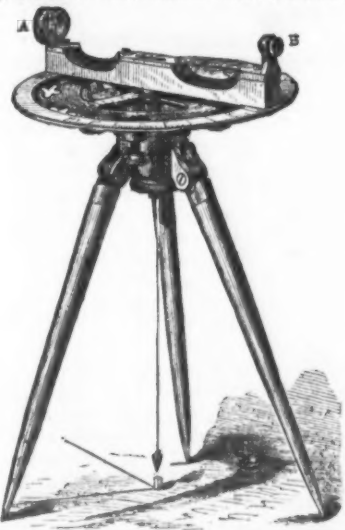


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PITTSBURGH.

SHOVELS,
SPADES and
SCOOPS.

SIBLEY'S
IMPROVED LEVELING INSTRUMENT.

Mounts complete. Price, \$10.
Trade supplied with one or two instruments at a fair discount. When ten or more instruments in all are ordered, a special discount will be given from the first. Catalogue containing full directions mailed on application.

BICKNELL & COMSTOCK, Proprietors,
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FRANKLIN S. MILES,
Manufacturer of
Brass, Iron, Steel and German Silver
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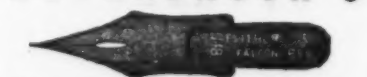


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Manufacturers of
Calipers, Carpenters', Stone Cutters',
Tin, Copper and Roller Makers'
MALLETs,

Hawking Beetles, Hawking and Calking Irons;
also all kinds of Handles, Sledge, Chisel and Hammer
Handles. Also

COTTON AND BALE HOOKS.
Patented Feb. 13, 1877; a new combination of Hooks.
456 E. Houston St., New York City.

ALWAYS ASK FOR
ESTERBROOK'S



Steel Pens.

THE MOST POPULAR PENS IN USE.

For Sale by all Stationers.

ESTERBROOK STEEL PEN CO.,

Works, Camden, N. J. New York.



KEYSTONE
Portable Forges.
All sizes, for the lightest
to the heaviest work, run
by Chain Gear and Flat
Belts. Strong blast and
durable. Send for Catalogue
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Mellert Foundry & Machine Co.,
Limited.

Works Established at Reading, Pa., in 1848.

Manufacturers of

CAST IRON WATER AND GAS PIPE,

With special Castings, Flange Pipe, Water Gates, Fire
Hydrants, Lamp Posts, &c. The Improved Canadian
Turbine Water Wheel. Machinery and
Castings of every description for Furnaces, Rolling
Mills, Grist and Saw Mills, Mining Pumps, Hoists, &c.
Columns, Brackets, Iron Railings, &c.
ARNOLD MELLERT, Supt., Reading, Pa.

BUFFALO SCALE CO.,
BUFFALO, N. Y.

Manufacturers of

R. R. Track Scales, Hay Scales, Coal

Scales, Grain Scales, Platform

Scales, Counter Scales, &c.

Send for price list, stating what you want.

Vulcanized Rubber Fabrics

ADAPTED TO
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RUBBER BELTING and PACKING.

Machine Belting,
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Belting,
Steam Hose,
Piston-Rod
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Vacuum Pump
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This company manufactures the immense DRIVING and ELEVATOR BELTS for the Buckingham
Elevators at Chicago, which have been running perfectly for more than Twelve Years, also those for
Armour, Dole & Co., Chicago, and Vanderbilt's great elevators of the New York Central and Hudson R.
R., New York, being the Largest Belts in the World. We are now making an Elevator Belt, 36
inches wide and 200 feet in length, which will weigh over 18,000 pounds.

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Plain and Rubber Lined.

Circular Woven-Seamless Antiseptic RUBBER
LINED "CABLE" HOSE and "TEST"
HOSE, Vulcanized Para Rubber and Carbolized Duck,
for the use of Steam and Hand Fire Engines, Force
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"TEST" HOSE.

"CABLE" ANTISEPTIC.

Emery Wheels and Packing.



ORIGINAL

Solid Vulcanite
EMERY WHEELS

LARGE WHEELS MADE ON CAST-IRON CENTER IF DESIRED.

The properties of these Wheels are such that they can be used with great advantage and
economy for cutting, grinding, and finishing Wrought and Cast Iron, Chilled Iron, Hardened
Steel, Slate, Marble, Glass, etc. These Wheels are extensively used by manufacturers of Hard-
ware, Cutlery, Edge Tools, Plows, Saws, Stoves, Fire Arms, Wagon Springs, Axles, Skates, Agri-
cultural Implements, and small Machinery of almost every description.

Pat. Jan. 26, 1879.

PATENT ELASTIC

Pat. Jan. 26, 1879.

Rubber Back Square Packing

BEST IN THE WORLD.

For Packing the Piston Rods & Valve Stems of Steam Engines & Pumps.

A represents that part of the packing which, when in use, is in contact with the Piston Rod.
B the elastic back, which keeps the part A against the rod with sufficient pressure to be steam tight,
and yet creates but little friction.

This Packing is made in lengths of about 20 feet, and of all sizes from 1/4 to 2 inches square.

Corrugated Rubber Mats and Matting,

Pat. 11,228, 213,001.

For Halls, Flooring, Stone and
Iron Stairways, &c.

Pat. July, 1879.



This practical and indispensable article—especially for wear where exposed to
ice, snow, or slush—was first intro-
duced by this company several years
ago, and its real value is in being
almost indestructible, when
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its manufacture, whilst the cheap,
publicly by reckless imitators of our patent goods soon becomes brittle
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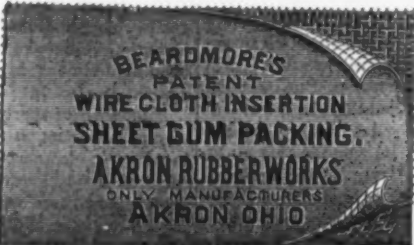


inferior quality forced on the public by reckless imitators of our patent goods soon becomes brittle
and crumbles to pieces. Address

NEW YORK BELTING & PACKING CO.,

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BEARDMORE'S
PATENT
WIRE CLOTH INSERTION
SHEET GUM PACKING.
AKRON RUBBERWORKS
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TACKS AND NAILS.



CUT TACKS, SHOE NAILS, WIRE NAILS,

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Cigar-Box Nails, Basket Nails, 2d and 3d Fine Nails.

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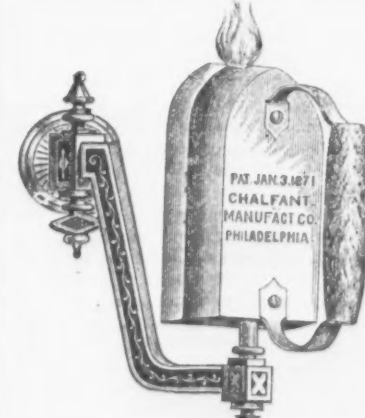
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CHALFANT MFG. CO.,

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Owners and Manufacturers of the

Celebrated Patent Gas Heat-
ing Smoothing Iron.

Can be heated on any ordinary gas burner in three
minutes. People who have to board cannot get
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Also manufacturers of the

Improved Troy Polishing
Iron

for laundry purposes. For sale by Hardware and
Housefurnishing dealers.

Liberal discount to the trade.

qualities of their "Active" wrought-iron
ranges at the Millers' International Exposition.
They produced bread, biscuits and
cakes of the finest quality, demonstrating
the utility of their ranges, and at the
same time showing the difference in the
yield of a superior quality of flour from that
of inferior grades. Their ranges received
first premium and much praise from visitors
and judges of good cooking. A number of
orders were received by this firm for their
"Active" ranges during this month from
new customers, and they anticipate a heavy
trade this year. They exhibit at their
warehouses a large collection of newly-
improved patterns in ranges and heating
stoves.

Messrs. W. C. Davis & Co., of Cincinnati,
made a very fine display of their "Favor-
ite" cook stoves and their "West Point"
hard-coal base-burner heating stoves, which
attracted much attention for completeness
and finish. The samples shown received
much praise and were awarded the highest
premium. The works of the above firm are
being pushed to their utmost capacity, with
large orders far back orders still unfilled.
They anticipate a heavy trade this season.

ILLINOIS.

The new building which is to be used for
the North Chicago Rolling Mills is being
vigorously pushed forward. It is situated
just north of the Calumet River, and within
a few yards of the lake. There will be but
little trouble in getting iron to and from
these new mills, as there is a good harbor
and plenty of water. There will be two
switch tracks connecting with the railroads.

The Joseph H. Brown Iron and Nail Mills
at South Chicago are closed temporarily,
but work on the company's new blast fur-
naces is progressing rapidly, and will prob-
ably be completed on the 1st of August next.

MISSOURI.

Preparations are being made at Neidring-
haus' Rolling Mills in St. Louis for a new
steam hammer. The improvements at this
establishment are being rapidly pushed to
completion.

McDonald's Rolling Mills are undergoing
a thorough overhauling and repairing. The
forging of car axles, however, still con-
tinues.

MICHIGAN.

The 25 years corporate existence of the
Detroit Locomotive Works expired by limita-
tion some days ago, and the company was
immediately succeeded by the Buhl Iron
Works. The company had determined to
transfer all the property and franchises of
the works to a new organization before the
old corporation was actually dissolved, and
by unanimous vote the Buhl Iron Works
will be its successor. The following were
chosen directors of the new company: C. H.
Buhl, John Owen, D. R. Pierce, Cleveland
Hunt, T. D. Buhl, R. A. Alger and Wm.
A. Moore. The business will continue without
interruption, the only change being that of
name. The company has not made any
locomotive engines since 1857, and the old
name was thus misleading.

KANSAS.

The Kansas Rolling Mill Company are
building another heating furnace for rail
mill use, and have likewise a universal
mill.

KENTUCKY.

Kenton Furnace blow in June 14th, and is
doing very well.

TENNESSEE.

We learn from the Chattanooga Trades-
man that resumption of work at the Vulcan
Iron and Nail Works, of that city, has been
indefinitely postponed. No attempt will be
made to run any part of the works, and the
whole establishment will be idle until it is
sold under the trust deed. The rolling mill
will have to be very fully overhauled before
it can be operated economically, and it will
probably be idle for several months.

ALABAMA.

The new rolling mill at Birmingham was
expected to start up on last Monday, the
28th ult.

LABOR AND WAGES.

The following is the Pennsylvania law
regarding the hours of labor passed in 1868:
First. (Laborers.) Eight hours of labor, be-
tween the rising and the setting of the sun,
shall be deemed and held to be a legal day's
work, in all cases of labor and services by
the day where there is no contract or agree-
ment to the contrary. Second. This act
shall not apply to or affect in any way farm
or agricultural labor or service by the year,
month or week; nor shall any one be pre-
vented, by anything herein contained, from
working as many hours over time or extra
work, as he or she may see fit; the compen-
sation to be agreed upon between the em-
ployer and the employee. All other acts or
parts of acts relating to the hours of labor
which shall constitute a day's work in this
State are hereby repealed.

W. D. Wood & Co., of McKeesport, Pa.,
refused to employ any men who belonged to
the Amalgamated Association, and a num-
ber of the workmen have withdrawn from
the association in order to regain their
places. Most of the former employees, who
were members of the union, however, still
refuse to yield.

The Crane Iron Company, Catsaqua,
Pa., gives notice that a reduction of 10 per
cent. will be made on all wages of employees
after July 1.

Signing scales does not seem to relieve
the Pittsburgh mills from strikes, and those
of a most petty kind. Several are in pro-
gress now.

There is a strike at the National Tube
Works, McKeesport, Pa., among the weld-
ers, owing to a reduction to what the com-
pany claim to be Pittsburgh prices.

One of the silliest strikes that we have
heard of lately is, or was, in progress at
the Mosler Safe and Lock Company's works,
Cincinnati, against a man who had lately
been promoted to the foremanship of the
shop. The charge against him is that he
sneered at the men some months ago when
they demanded an increase in wages. "On
what meat do these Caesars feed?"

The workmen of the P. & R. C. & I.
Co. shops have formed a beneficial associa-
tion, the object of which is to mutually as-
sist each other in case of accident or sick-
ness, and their families in case of death.
The association is under the control of a

Board of Directors. In case of death each
member will be assessed 50 cents, the aggre-
gate assessment to be paid to the widow or
next of kin, or be devoted to the directors
to paying the funeral expenses. On the
death of a member's wife, 25 cents will be
assessed on each member. Sick and dis-
abled members will receive \$6 per week.

Our readers will remember that at the
National Coal Miners Convention held in
Pittsburgh early in the year, direful things
were voted to be done Aug. 1 unless the
operators yielded. It seems that the leaders
are getting weak-kneed over the prospect
of carrying out the programme. The Secre-
tary for Ohio says: "Much has been said
and more thought on 'What will the miners
do on the first day of August?' An atten-
tive listener will be made acquainted in a
short stay among the miners with the fact
that there is a great lack of confidence ex-
isting among them, as a class."

The threat recently made by the boilers
of this country that they would not work
iron made in the country and brought here,
contributed largely toward knocking the
bottom out of the English boom.—*Labor
Journal.* It will be to have a good opinion
of one's self.

A strike of some importance is in progress
at the forge and iron works, Pittsburgh,
over the discharge of a workman whom it
is claimed was discharged for his unionism.
It is getting so now that a union man can-
not be discharged for any reason, no matter
how good, but there is a strike at once.

Hon. Miles S. Humphreys, Chief of the
Bureau of Statistics of Pennsylvania, has
just issued his annual report. His wages
tables are quite interesting. After present-
ing a large number of detailed reports, giv-
ing the names of the employers, number of
men employed, where located, nature of
business, &c., the report concludes with the
following, showing the average weekly wages
of employees, the average weeks employed
during the year, with the total earnings for
the year 1878. We give only those trades
having interest for our readers:

Occupation.	Weekly wages.	Weeks worked.	Earnings for the year.
Miners, coal (anthracite).....	\$3.28	43	\$140.04
Miners, coal (bituminous).....	3.31	40	132.40
Blast-furnace employees.....	0.44	48	21.12
Puddlers (iron).....	15.14	38	575.32
Heaters (iron).....	17.08	40	683.20
Rollers (iron).....	23.53	37	870.31
Roll turners (iron).....	40.97	44	1,802.68
Roughers (iron).....	17.94	44	789.36
Catchers (iron).....	0.50	45	22.50
Refiners (iron).....	17.97	40	718.80
Forgemen (iron).....	15.50	38	589.00
Hammermen (iron).....	17.50	40	700.00
Roll hands (iron) not speci- fied.....	22.66	47	1,065.02
Helpers (iron).....	11.00	34	374.00
Shearer, sheet (iron).....	18.90	43	812.70
Straightener (iron).....	10.00	58	580.00
Hammer driver.....	12.00	43	516.00
Steel melters.....	30.48	39	1,198.72
Steel converter.....	16.50	38	627.00
Steel helper.....	15.00	38	570.00
Nailers.....	10.27	36	369.72
Tack maker.....	35.70	26	928.20
Nail cutter.....	12.00	45	540.00
Spike maker.....	9.00	48	432.00
Nail packer.....	8.40	53	445.20
Rivet maker.....	20.00	36	720.00
Wire drawer.....	15.00	38	570.00
Pipe threader.....	9.00	50	450.00
Molders (iron).....	11.25	43	483.75
Blacksmiths.....	10.33	43	444.19
Bricklayers.....	12.57	43	540.51
Carpenters.....	10.61	48	509.28
Cabinet makers.....	7.80	46	358.80
Carriage makers.....	8.75	45	393.75
Engineers.....	15.30	45	688.50
Glass workers.....	18.30	45	823.50
Machinists.....	10.54	47	505.38
Tinsmiths.....	11.12	51	567.12
Gas fitters.....	10.50	36	378.00
Track foremen (railroad).....	10.00	53	530.00
Brakemen (railroad).....	11.94	49	585.06
Flagmen (railroad).....	7.30	51	372.30
Firemen.....	7.74	50	387.00
Teamsters.....	8.50	46	391.00
Slaters.....	6.00	39	234.00
Quarrymen.....	6.25	46	287.50
Laborers.....	7.08	42	297.36
Brass finishers.....	6.04	48	290.32
Iron ore miners.....	9.00	46	414.00
Lead furnace helpers.....	7.00	44	308.00

Belgium's Foreign Trade.—The Brus-
sels papers publish the table of Belgian for-
eign trade during the first four months of
the present year. It appears from this table
that, as compared with the corresponding
period of 1879, the imports of manufactured
steel have increased by 923,000 francs, coal
by 980,000 francs, iron by 408,000 francs,
woolen yarns by 677,000 francs, machinery
by 843,000 francs, woolen goods by 1,213,-
000 francs and silk goods by 1,304,000
francs. The imports of wool, on the other
hand, have decreased by 6,086,000 francs,
and of cotton tissues by no less than
11,552,000 francs. Among the exports we
notice an increase of 561,000 francs in man-
ufactured steel and of 2,509,000 francs in
coal; there is also an increase of 549,000
francs in the exports of cotton yarns, of
16,375,000 francs in the exports of woolen
yarns, 852,000 francs in silk tissues, 4,494,-
000 francs in cotton tissues and 664,000
francs in woolen tissues. There is a decrease
of 460,000 francs, on the other hand, in the
exports of linen. The total imports show an
increase of about 2 per cent. over the im-
ports during the corresponding period of
1879, and the exports show an increase of
14 per cent. over the figures of the first four
months in 1879.

The largest coke works in the United
States are the Morewood Works of H. C.
Frick & Co., which are situated a mile or so
west of Mt. Pleasant, in the great coal dis-
trict of Western Pennsylvania. These works
are as yet uncompleted, but a short time will
see them finished and in full operation. At
the present writing the works consist of
two shafts and 200 ovens in active operation,
and over 1000 acres of coal land. The shafts
are distinguished as upper and lower, and
are about half a mile apart. But in this
short distance the vein of coal dips to such
an extent that there is a difference of 71
feet in the distance that the coal has to be
raised to the level of the tipples. At each of
the shafts there are two large engines of 50
horse-power. The ovens have a capacity of
about 300½ tons of coke each per day, and
make about 25 cars of coke a day. When the
works are completed there will be 500
ovens in blast, and the product will be in-
creased to 80 cars of coke per day. It will
require to make this output the services of
500 men.

The Iron Age

AND
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The statement recently made public on the
authority of Secretary Sherman, that the cost
of our civil war was upward of \$6,000,
000,000, has again directed attention to
the wonderful financial history of this coun-
try for the past 20 years, more especially
during the past 15 years. In that time we
have paid \$800,000,000 of the national debt,
or nearly one-third of its total at the mo-
ment of its greatest amount. Not only this,
but the interest account has been reduced
by reduction of the debt and refunding of
the same from \$150,000,000 per year to about
\$80,000,000. At present the reduction is
going on at the rate of half a million a day.
This is a showing far superior to the boasted
"payment of the millards." France bor-
rowed her millards; we have paid our
millions, and this has been accomplished
without any burdensome taxation. The
national revenue of Great Britain is \$13.00

per head of population, of France \$16.00,
while in the United States in 1879 it was but
\$5.50. Notwithstanding this showing, it
could be better. It is costly military and
kingly establishments that run up the ex-
penses in European Countries. Perhaps
their civil list outside of these would make
as good a showing as ours.

What are the Facts About Iron Stocks?

Probably the most injudicious people in
the iron trade at this time are the class of
dealers who go about among consumers pre-
dicting an early recovery, and urging pur-
chases at present prices as a good invest-
ment. We do not care at this time to dis-
pute the general correctness of their views,
but whether right or wrong they are acting
injudiciously, and are doing vastly more
harm than good.

What is wanted just now more than any-
thing else is correct and comprehensive in-
formation. The average consumer of iron
is not such a fool as to be misled by the con-
fident talk of dealers, whose only object in
life is to sell iron to the best advantage pos-
sible. In fact, he is rendered suspicious when
he discovers too much anxiety on the part of
the dealer to impress him with a rose-colored
view of the immediate future. The broad
facts that everybody knows are that there
is a large surplus of foreign iron in the
country, that it is being pressed for sale at
low prices to cover bankers' advances, and
that until this surplus is reduced to conve-
nient proportions recovery cannot take
place. It is also known that consumption,
large as it is, is not preventing a considera-
ble accumulation at domestic furnaces, that
more furnaces are now making iron than can
sell it profitably, and that a considerable
contraction of production would be attended
with advantage to the trade at large. This
much everybody knows; but when more
detailed information is sought—when an
effort is made to find out how much iron is
held in store and yard and bonded ware-
house, what it is and who owns it, the diffi-
culties of the inquiry become practically in-
surmountable. Misinformation or no infor-
mation at all are all that any one can get
who sets about collecting it. Between the
conflicting statements of the bulls and the
bears, the buyer is naturally led to magnify
the actual obstacles to recovery. The one
tells him that consumption is rapidly reduc-
ing the stock of desirable iron in the market,
and that before cold weather iron for im-
mediate delivery will again be scarce; the
other tells him that every available inch of
store and yard room is full, and that those
who are now receiving consignments of iron
are obliged to let it go into bonded ware-
house, being unable to find any other accom-
modation. Of the condition of affairs in
Philadelphia, the *North American* of the 22d
ult. says:

The tide of foreign iron which has been pouring
into this port since the commencement of the
boom last spring, and which, even now, continues
without interruption, has been a blessing to the
bonded warehousemen, and they have reaped
large profits. These warehouses are filled to
bursting with the products of the foreign fur-
naces, and at one time the lack of accommodation
was so apparent that importers and the custom-
house people were at their wits' end where to
store the constantly arriving imports. Within
the last month three new bonded warehouses
have been established which have somewhat re-
lieved the pressure. One of them has been
started at Girard Point, but it is already engaged
full. The two others are at Fitzpatrick's and
Hoffman's yards. Under ordinary circumstances
our bonded warehouse room is ample, although
it does not compare with Brooklyn. A custom-
house broker, in speaking about this subject, said
that there is only room left for about 200 tons of
general order iron. Importers are paying the
duties on foreign iron and storing it in free
warehouses to wait for a rise.

From Baltimore we have rather more
specific information. A well-informed cor-
respondent in the trade sends us the follow-
ing statement of the stock of foreign iron in
that port:

Pig iron . . . 14,000 tons.
Old rails . . . 7,000
Wrought scrap . . . 1,000 "

Our correspondent says: "The pig is
generally of poor quality, about 2000 tons
only being Scotch, and about 1800 tons of
that is held by agents. Much of the rails
and pig is held by your city."

It is a mistaken policy, under existing
conditions, to try to bolster up iron. It can-
not be done, and the effort only complicates
the evil. Facts, clearly and authoritatively
stated, are what are wanted at this time.
The great mass of consumers would face
the actual situation with a great deal
more confidence than they can the un-
known accumulation. If there is one, two
or four months' supply in store and yard
and at furnaces, the announcement would
have only a beneficial effect. If the facts
concerning the stocks of Scotch iron were
known, many wrong impressions would be
corrected and much more confidence would
probably be felt than is now possible. The
same would be true with regard to English
irons, if it were known of what the large
stock is composed and how apportioned
among the different grades. Of the large
amount of English iron in this country,
both pig and manufactured, the greater part
is rather poor stuff, and much of it very
bad indeed. We imagine that the surplus of
foreign iron which can compete with good
American brands on any other basis than that
of cheapness, is not so large as is generally
supposed. At any rate, the facts will be less
formidable than the speculations of consumers.

The British Iron Trade Situation.

The Board of Trade returns for May show
with some accuracy the extent of the relapse
which has overtaken the iron trade of Great
Britain. The cessation of the American
demand is a fact which at last forces itself
on the trade, and the cessation of specula-
tion has carried the market to a point of de-
pression which is not warranted by any in-
crease that had taken place in what the
English trade papers call "solid business." But
outside of the American demand there is
some substantial improvement, which it is
hoped will continue to develop until the
harvesting of the crops, which is expected
to give trade a considerable impetus. The
May returns show some improvement in
Indian, Colonial and South American trade,
but not enough to warrant any great expec-
tations for the future.

The latest trade advices are to the effect
that the recent slight increase of firmness
in Scotch warrants was purely speculative
in character, and had no increase in the
consumptive demand behind it. The man-
ufactured iron trades are in an unsatisfactory
condition, and the shipbuilding and engi-
neering departments are becoming slack. A
slight improvement in pig iron is reported
from Middlesbrough, mainly owing, as usual,
to the firmness in the Glasgow market. The
fall in iron has favorably affected the ship-
building trades. All over the Tyne district
a feeling of depression prevails, tempered
by the consideration that in the absence of
speculation the balance of trade may be ex-
pected shortly to right itself. The demand
for Bessemer and forge iron has almost
ceased in the Northwest, and small parcels
of both have been disposed of as low as 62s.
6d. per ton, an immense reduction from
the prices ruling but a short time ago.

There are inquiries both from the Con-
tinent and America, but the actual sales
have been very few. Nevertheless, owing
to the orders booked forward, there is no
apparent diminution of the activity in either
furnaces or forges. There is a very flat
market at Manchester. In the Barnsley dis-
trict, in face of the same slackness, produc-
tion is being kept up, and in one instance
has been extended. In other parts of York-
shire similar conditions prevail, with com-
plaints of over-production. In the Leeds
district alone, trade, for the best Yorkshire,
is reported to be fairly active. From South
Wales also the news is not so unsatisfactory
as from some other quarters. The staple
trades of Birmingham are dull, without hope
of improvement; and the same applies, with
a few exceptions, to the local industries of
Wolverhampton. The coal trade remains
in its usual depressed condition where it has
not changed for the worse.

As the rule, the English trade papers try
to speak cheerfully of the situation, but it is
evident that the outlook is by no means
bright. In the absence of any hope of
breaking the cordon of "hostile foreign
tariffs" which surround her, Great Britain
is compelled to face the inevitable fact of a
shrinkage of her great industries. What
remains to her of the world's trade is not
much in proportion to her productive ca-
pacity, and the probabilities are that it will
rather diminish than increase. But her posi-
tion in this matter should not be mistaken.

The British Lion is not dead by any means.
It is sorely hurt, but its wounds only make
it more ravenous in its quest for markets,
and more terrible in its competition with the
industries of countries which open their
ports to English manufactures. We have
only to look at our markets to-day to gain
some idea of what would happen under any-
thing approximating to free trade, or even
under "a tariff for revenue only." Idle men
and idle machinery, capital unproductive,
and all the veins and arteries of trade choked
with accumulations of foreign goods—chiefly
English. These are but suggestions of the
results which would follow opening our
ports to Great Britain under a revenue
tariff. Until we are sure that our agricul-
tural products are not already in excess of
the requirements of trade, we would do well
to take care of our manufacturing indus-
tries. It would be madness to do other-
wise.

It has been a favorite method of the
Amalgamated Association of Ironworkers
when attempting to account for the differ-
ence in wages East and West, to assert that
all or nearly all of the good workmen are
West, and it is only inferior workmen that
the Eastern mills can get to work at the
price paid. The officers of the Amalgamated
Association have again and again asserted
in conferences with the manufac-
turers, in interviews with the daily papers
and in their own columns in their Pittsburgh
organ, that as a class the puddlers East are
inferior workmen; that the iron produced
by the Eastern puddlers is poor in quality
and that the waste in the furnace is enor-
mous. In a word, they have adopted the
plan that every honorable man dis-
countenances—they endeavor to enhance the
value of their own goods by condemning the
quality of those of their neighbor. This mode
of attack is especially made use of against
the workmen in any mill who do not choose
to submit to the dictation of the union. They
recently, for example, attacked the men at
work at the Susquehanna Iron Company's
mill at Columbia, Pa. There had been a
strike at this mill and it is now running in-
dependent of the union. The organ of the
union at once began to cry down the men at
work, saying: "There is but one good

workman in the mill, the average yield
"being about 300 pounds out of 400. They
"are getting large quantities of finished
"iron returned on account of bad work-
"manship." We are assured by the man-
agement of the mills that these are absolute
untruths. They never had a better class of
workmen than now, and they are mak-
ing better iron and better weight than
when the men were union men. The
same course of misrepresentation was
pursued at Catasauqua, at Scottdale and
at other places that could be named.
In many of these cases we have investi-
gated the charge of inferior work, and have
seen from the books that the statements were
false. The readiness of the men at these
mills to strike is told in a remark contained
in the article which we quote above:
"Some of those who went to work under
"the iron clad, quit as soon as they found
"out that those on a strike are being sup-
"ported." Who would not? There are but
few men who would not rather be idle and
be supported than work and support them-
selves. No doubt the union can get many
men to strike if they will support them.

A Remedy for the Evils of Private Brands.

In another column we print the substance
of a very practical communication on the
evils of private brands and how to avoid them.
The importance of the subject discussed, and
the information of the writer, entitle his
letter to the most careful consideration of our
readers.

It is not necessary to enter into argu-
ments upon the subject of private brands at
this time. The facts existing are pretty
generally admitted by all concerned. There
is practically no defense of the abuses to
which private brands have given rise. Ac-
cordingly, all that is left to do is to stamp
out the evil, or by some means provide a
remedy for it.

Private brands have been so generally
abused by importers and dealers, that when
an individual consumer has become disgust-
ed with his treatment at the hands of some
one house, he has not known where to turn
next, for all were selling about the same
grade of goods and in about the same man-
ner. Hence "humbugging" has been
easier of accomplishment than a literal
rendering of our correspondent's words
would seem to indicate.

It is greatly to the credit of the houses
engaged in the tin-plate trade that they passed
safely through the fearful ordeal of the late
panic. This does not prove, however,
that they have not, as the rule, and under
the pressure of a supposed demand, lent
themselves to practices which, when
viewed from certain standpoints, are of
questionable integrity. Trade terms have
been adapted in their meaning to suit cir-
cumstances. With a general lowering of
quality, terms indicating quality have not
been modified. The man who to-day buys
plates by brands in use a short time since,
or who designates quality by terms he learned
a few years ago, is not likely to obtain
goods of satisfactory character. These
changes, which are no secret, have always
been made in the interest of the seller and
against the interest of the buyer.

Undoubtedly there exists a great deal of
misapprehension on the subject of private
brands, as our correspondent asserts, and,
for that matter, concerning brands in gen-
eral. That there are some reliable private
brands no one will question, and, on the
other hand, it is equally true that there are
many unreliable makers' brands. The com-
plaint of the consumer is not against brands,
but against the misuse of brands. What he
wants is some reliable means of indicating
quality. He has learned to look upon brands
as statements of quality. He wants those
statements to be trustworthy in all re-
spects.

The suggestion of our correspondent in
the way of a remedy is valuable, and we
have no doubt that many of our readers will
find it very useful. It does not necessarily
dispose of the question of private brands,
but the practice he proposes will go a long
way toward overcoming the evils of the
present system. Probably no better plan
can be devised for the use of consumers
while the trade is in its present demoralized
condition. We therefore heartily commend
it to the consideration of our readers.
We cannot indorse in every particular the
standards of grades laid down by our cor-
respondent, but while differing from Mr.
McCann in some minor particulars, we con-
sider his suggestion a valuable one.

There is one point to which we would
again call the attention of consumers. The
original source of the evil of private brands
was an insane demand upon the part of con-
sumers for lower prices. Goods of certain
nominal grades were demanded at figures
which could not afford a reasonable profit
to manufacturer and importer. No stipulation
was made as to actual quality, but appear-
ances were to be maintained. Had it not
been for this the evils of private brands
would never have existed. The remedy
proposed by our correspondent is one to be
used by the very men who, directly or in-
directly, are responsible for the present con-
dition of the trade. But it is one which will
cost something to put in practice. In other
words, a good article is always worth a fair
price, and consumers ought not to expect to
buy it for less than a fair price. If orders
are made out by such a schedule as our cor-
respondent suggests, prices must be paid
accordingly. This is as it should be. There

is no house in the country dealing in tin
plate which will not furnish a fair quality of
goods for a fair amount of money at any
time. As we have at different times re-
marked, the consumer has been getting just
what he ordered and just what he paid for.
He first invited the delusion, and therefore
it is his own fault if he is not satisfied.
With due respect for his complaint, we still
lay the major share of the responsibility at
his door. With an intelligent remedy for
the evils of which he complains now placed
before him, will he act upon it and extricate
himself from his uncomfortable position?

The "Grand Continental Federation."

We have before us a copy of a call for a
National Convention of Trade Unions, hav-
ing for its object the formation of a Grand
Continental Federation, to include all inter-
national, national and local trade unions in
the United States and British North Amer-
ica. The objects of this proposed Grand
Continental Federation are stated as fol-
lows:

1. To discuss and examine all questions affect-
ing the interest of the working classes which
cannot be acted upon in special trade or labor
unions, and to concentrate labor so as to enable
it to successfully cope with concentrated capital.
2. To impress upon the various branches of
industry the importance and necessity of main-
taining protective unions.
3. To devise the best means of adjusting diffi-
culties that may arise between employers and
employees.
4. To prepare in legal shape, and present for
enactment to the different governments, bills for
the removal of statutory restrictions of the rights
of organized labor, and also for the enactment of
laws tending to ameliorate the conditions and
promote the welfare of the working classes, and
take steps to urge their passage.
5. To encourage productive and distributive co-
operation.
6. To propagate strictly trade-union doctrines,
and, wherever possible, disseminate arguments in
their favor, and generally to elevate unionism,
and obtain for it the respect and recognition to
which it is entitled.

This sounds very well, but the same may
be said of a base drum vigorously beaten.
We have no doubt that many workmen
will be impressed by the above programme,
and conclude that the proposed federation is
a very magnificent thing which, if organized,
will be able to accomplish vast good for the
interest of labor. We ask them to look a
little further. It is every man's right, and to
some extent his duty, to be governed by con-
siderations of self-interest. To accomplish
any good, the federation must be able to es-
tablish a better relation between the individ-
ual master and the individual workman.
Is there any reason to hope that it will be
able to do this? On the contrary, is there
not every warrant for supposing that the
scheme has been devised by ambitious or-
ganizers who, by stirring up strikes and
promoting antagonism between employers
and workmen in a larger way than they
are now able to, hope to make themselves
more important and to have the handling
of more money contributed by wage ear-
ners? Times like these are as inglorious in
the estimation of the professional agitator
as is a time of peace in the estimation of
the professional soldier. The best thing
the working classes can do is to pay no at-
tention to the proposed Grand Continental
Federation until there is some better reason
for its existence than is contained in the
programme of the work it is designed to un-
dertake.

The Cause and Prevention of Oil Fires.

The prevalence of oil-tank fires this year
and the great loss that has resulted from
them, have led to more careful investiga-
tion into their causes, and to inquiry as to
the means of prevention. Most of these
fires are caused by lightning. If the fire
was confined to the tank struck, little dam-
age would result, but, unfortunately, that is
seldom the case. The burning oil boils
over or the tank explodes, and the oil pours
out in streams of fire, igniting other tanks
and houses that are in its course, and, as
the buildings in the oil regions are mostly
of wood, the loss is usually heavy and wide-
spread.

Some four years since, in an editorial on
these tank fires, we gave a theory as to the
cause of the attraction they seemed to have
for lightning, to the effect that from every
oil tank that is struck by lightning there is a
constant escape of light hydrocarbon vapor,
which forms a permanent cloud or column,
rising to a great height above the tanks.
This vapor is a conductor, which the light-
ning naturally follows, and which attracts it.
We see that the *Scientific American* has
adopted this theory and indorses it, but
fails to make plain one point—that this
column of vapor rises only from tanks
with wooden tops; or, in other words, an
iron-top oil tank is never struck by light-
ning. This is a remarkable fact, and points
out the remedy against the origin of these
fires. We have carefully watched them,
and speak from positive knowledge of all
tank fires that have been caused by lightning
during the past seven years, except the one
at Titusville early this month, and we state
with confidence that an iron-top tank has
never been struck by lightning. Of the
Titusville fire we have no positive knowl-
edge on this point, but, judging from the
locality and the size of the tank struck, we
should say that it was a wooden-top tank.
There is also one case, we believe, in which
an iron-top tank was fired by lightning, but
in this case the lightning struck a pipe lead-
ing to the tank at a point some distance

from it. In a word, the remedy for these oil fires caused by lightning seems to be the changing to iron of all wooden-top tanks.

It is not often that an English journal of the prominence and carefulness of the *Engineer* allows itself to give up the whole argument for free trade and own that the American theory of protection can by any means, or in any sense, be right; yet this is just what the *Engineer* has done in a recent editorial on the steel rail question and the attitude of the railroads of this country on the same, as expressed by Mr. Storrs before the Committee of Ways and Means. The *Engineer* says: "It will be seen that American railway companies look ahead, and hold that, although they may pay more at the moment for rails than they would do did 'free trade exist, yet that the operation of 'protection will stimulate native production and home competition, and ultimately 'give them a cheap rail. The chances are 'that the argument will turn out to be 'sound.' If that is not conceding all that Clay, Stewart, Carey and Kelley have claimed, we fail to get the meaning of words. If the argument 'turns out to be sound,' it justifies the position that American protectionists have held for more than a generation, and that American and English free traders have combated for as long. The *Engineer*, in a charming bit of *natete*, at the close of the article from which we have extracted the above, gives its especial ground of complaint: "The point of special interest for 'the British steel maker is that consumers 'across the Atlantic should be protectionists. This is contrary to all the accepted 'laws of political economy, and augurs ill 'for the future of our rail trade with the 'United States.' That consumers should be protectionists is 'contrary to all the accepted laws of political economy.' What laws, and by whom accepted? Certainly not by American protectionists, for they claim that, according to political economy, consumers in the United States should be protectionists, and how they could be anything else, if, as the *Engineer* says, Mr. Storrs' argument 'should turn out to be sound,' we cannot see. If sound, the 'accepted laws of political economy' are unsound.

It seems that the French government, despairing at last of enticing the American fly into its reciprocity web, have taken other steps and are offering inducements. Premier De Freycinet, receiving a deputation in favor of a Franco-American commercial treaty, is reported to have said that overtures had been made by the French minister at Washington, but Secretary Evarts had replied that though such treaty was desirable, circumstances oblige the United States government to defer negotiations. This is a diplomatic way of saying No, thank you!

NEW PUBLICATIONS.

STEEL: ITS HISTORY, MANUFACTURE, PROPERTIES AND USES. By J. S. JEANS, Secretary of the Iron and Steel Institute. E. & F. N. Spon, publishers, London and New York. Price, \$4.50.

At the time of its first appearance some months ago, we gave a summary of the contents of Mr. Jeans' new book on Steel, reserving for a future occasion a more detailed account of its character, its aims, its merits and its defects. A careful study of the work has confirmed our first impression. To those who wish to possess, within comparatively narrow compass, a fair scrap book of the literature on steel, the ponderous volume before us will prove of some service. Mr. Jeans in his preface clearly states that his labors have naturally been more those of compilation than of authorship. This is in a certain sense true of all text books. Percy and Kerl are both compilers—the latter especially so—and yet their books differ very widely in character from Mr. Jeans' work. Both are masters of their subject and of allied sciences, and are able, so far as persons who have not made metallurgy their practical, every-day business can be, to pass judgment upon conflicting theories or practical claims. Both of the eminent metallurgists named are profoundly learned and command well-deserved attention on the part of manufacturers and engineers, because in some branches they are authorities. Whatever may be found of value in Mr. Jeans' work, one fact is clearly proven by it—a fact which we have suspected before—that the secretary of the Iron and Steel Institute is no metallurgist, no engineer and no chemist, and that as a metallurgical authority he should be distinctly and emphatically repudiated. We acknowledge that credit is due to Mr. Jeans for having undertaken to fill a gap which has long been felt, and no one is better able to realize the difficulty attending an attempt to bring order out of a chaos of literature than those connected with technical journals; but we cannot help expressing our disappointment with the book before us. The subject is one of such scope that few, if any, metallurgists and engineers now living could expect to succeed, alone and unaided, in doing justice to it in all its bearings. Mr. Jeans has failed in some important respects, because he does not unite in one person the literary ability, the metallurgical and chemical knowledge and the experience of the practical engineer. Mr. Jeans' mistake has been that he has not recognized the necessity of that combination. He has probably thought that his own facility as a writer need only be supplemented by some hints and suggestions by some eminent metallurgists as Bessemer, Siemens and others. While we are thus forced to state that he has not shown much ability as an author, especially when purely technical questions are discussed, we are pleased to acknowledge that Mr. Jeans has developed an extraordinary amount of industry as a compiler. He has pretty thoroughly ransacked the stores of metallurgical literature, and has, on the whole, made fair selections. We have, we believe, said enough to show what our

impressions have been, and may now ask our readers to turn over the pages with us, with a view to making them better acquainted with the contents of the work.

In the first section, that relating to the history of steel, Mr. Jeans carries us by successive stages through the early prehistoric period of steel, and to its modern development in general and in Great Britain in particular. Another chapter, giving the progress of invention in steel manufacture, is drawn chiefly from the Patent Office records of Great Britain. The most important subjects discussed are the early discoveries of Mushet and Heath, both of whom have been so unfortunate in failing to reap the advantages of their inventions. In the next 45 pages, Mr. Jeans relates, with much detail and just a little too much admiration, the history of the Bessemer steel industry. The chapter is one full of interest, and no one will read of the well-known severe struggles of the illustrious inventor without a feeling of satisfaction that he has been amply rewarded for his pluck and perseverance; but it is unfair and unjust to pass by in silence many well-known names who have really made the Bessemer process what it now is. The open-hearth process, treated in the next chapter, may also be well considered at the present stage of its development as the result of the labors of many men. After describing a considerable number of processes which have, deservedly or not, lost their interest to the greater number of metallurgists, Mr. Jeans passes to a series of historical sketches of the growth of the steel industry in many countries, beginning with the United States. For his data relating to the history of the trade in this country, Mr. Jeans has wisely confined himself to Mr. Swank as an authority, while he has drawn freely upon Messrs. Holley and Smith's articles in *Engineering* and on Mr. Bell's reports for facts relating to the modern status of our industry. A little too much room is taken, under the historical sketch of Germany, by an elaborate description of the Krupp Works, matter which would, together with similar descriptions, belong more properly to other sections of the work. The notes on France and Austria are good, although we would have preferred to see the special circumstances affecting the steel trade of each country brought more prominently forward. A more elaborated and generalized essay on the development and present status would have given a fairer idea of the industry of each country than a detailed, comparatively unimportant description of the plant of one or two industrial establishments, however large they might be and however progressive their managers might prove. In some instances, where the subject has been treated in this manner by local metallurgists, Mr. Jeans has sufficiently appreciated its value to reproduce it, as in the case of Belgium and Sweden. *Appropos* of Sweden, Mr. Jeans indulges in a queer eccentricity. Probably misled by the fact that the description of an Austrian establishment appeared in a Swedish technical journal, Mr. Jeans quietly transfers it to the latter country, and we are startled to find the practice at the Elbswald Works, Austria, serving as an example of Swedish methods. Some details relating to the steel industry of other countries, of which those for India possess greatest interest, closes the first section of the work, which, on the whole, we would pronounce the best.

The manufacture of steel is the second division, opened by a chapter on the earlier processes, partially still in vogue on a comparatively restricted scale. Among these we would count the cementation process, the manufacture of shear steel, the crucible process, the making of German and natural steel. Good and brief descriptions of these processes, brought up to date, are given. More than a hundred pages, profusely illustrated, are devoted to the mechanical appliances of the manufacture of Bessemer steel. Naturally, Mr. Jeans makes ample room for the American system, for a full presentation of which he is chiefly indebted to Messrs. Holley and Smith. There are brief descriptions of the Cumberland hematite deposits and the manufacture of pig iron from this ore; also a detailed and admirably illustrated account of some of the principal Bessemer works of England. Mr. Jeans reproduces, as a chapter on the theory of the process, Chernoff's well-known paper, to which some observations, made by Mueller, of Osnabrueck, are added. We must confess that of the two the elaborations of the latter metallurgist appear to us a more able and more modern exposition of the principles involved. We are surprised that Mr. Jeans should have contented himself without even mentioning in his 'theory of the Bessemer process' the important role which the lining plays. True, he discusses this at length in other portions, but we are at a loss to find out what reasons can have possibly led him to separating topics so closely related in so arbitrary a manner.

The way in which the open-hearth steel manufacture is described is without such disturbing lack of system, and we feel confident that American metallurgists will find it interesting as well as profitable to study this account, which is chiefly confined to English practice, although the recent improvements, like the Pernot Furnace, are accorded ample space and attention. A chapter on the various methods used from producing sound castings by the Whitworth, Neuberg, Jones and Daelen processes, and by the well known Terrenore method, closes this section, which is almost exclusively descriptive in character, no critical examination being attempted.

Mr. Jeans' weakest point appears to be chemistry, to judge from the manner in which his chapters on 'Chemical Properties' are built up. It is true that the mass of incomplete and contradictory evidence which has accumulated within the last decade relating to the chemical constitution of steel is perplexing. We hardly think, however, that it is fair to expect the average reader to go through pages of matter giving the views of numerous authorities on the question how carbon, manganese, phosphorus, &c., affect steel. What was wanted was a short, clear exposition of the present status of the question, and some words indicating the course to be pursued in investigations touching upon the subject. Mr. Jeans ought to have intrusted

his manuscript to the care of some thorough chemist, who would have undoubtedly succeeded better in giving a summary of the methods used in determining carbon, manganese, phosphorus, &c., in iron and steel, and would certainly not have permitted such slips like 'silicium,' on pages 556 and 557, and repeated references to 'Frezenius.' Mr. Jeans appends to his remarks on phosphorus in steel a brief and admirable review of the question of the elimination of phosphorus, in which, however, we are astonished to see he mentions, before speaking of the Thomas and Gilchrist process, M. Harmet's proposal to use two converters.

We are at a loss to see why this was not brought in incidentally during the discussion of the basic process, of which it is a modification, instead of being accorded the dignity of apparently standing independently. The final series of chapters on the physical and mechanical properties of steel is a very voluminous one, which, though it contains little new, embraces all that has been done in the way of experimental research. Full acknowledgment is given to the important contributions made by American engineers, and we may mention that, in general, Mr. Jeans appears to be much impressed by the achievements of those working on this side of the Atlantic. Mr. Jeans' last section, however, suffers from the drawbacks of the whole work. He has been overwhelmed by the great mass of matter obtained by diligent and conscientious search, and has not had confidence enough to let the bulk of it alone. He has given to the public the scrap book which ought never to have left his desk, as its true purpose was only to serve him as a basis for his final volume. He should not have stopped where he did, but ought to have continued his labors by boiling it down to just one-half its present bulk of 850 pages. In its present shape we can only recommend it to those who wish to have at hand for easy reference a very full summary of the contents of the technical literature of the last decade. As such it deserves to fill a place, until now unoccupied, but we need hardly repeat that, as a text book on the manufacture of steel, it does not meet a want severely felt by all. It seems to us an open question whether the time has come when such a book can be safely issued. The technology of steel is so near the solution of a number of all-important problems, and is so likely to undergo general and sweeping revolutions, that a book now issued would probably be soon out of date. Mr. Jeans' work very closely reflects the present chaotic condition of knowledge, and it has, therefore, considerable value. As a condensed library it will be a revelation to many.

THE ANTHRACITE COAL FIELDS OF PENNSYLVANIA. By P. W. SHEAFER, M. E., Pottsville, Pa.

We have received from Mr. Shearer, whose statistical chart and tables we had occasion to refer to quite recently, a copy, in pamphlet form, of a paper read before the American Association for the Advancement of Science. It is a short popular review of the resources of our anthracite regions, and is, we imagine, chiefly intended to emphasize the fact that we are very ruthlessly wasting two-thirds of treasures which are, comparatively speaking, limited in extent only. He computes that the anthracite veins practically available for extraction would be exhausted in 186 years. At the time the paper was read we gave a short abstract embodying the principal points made. Mr. Shearer appears to be considerably puzzled by the great disturbance of the coal strata from their original position, and by the absence of fossil remains in them. He seems to lean toward the theory that contraction of the earth's crust brought about the movements in the strata.

SCIENCE: A Weekly Record of Scientific Progress. John Michels, editor, New York. Price \$4 per annum.

With the aid and co-operation of a number of scientists, Prof. Baird, Holden, Marsh, Wilder, Young and others, Mr. Michels proposes to found a weekly newspaper which is to be a weekly record of scientific progress, and is intended to afford scientists facilities for a prompt publication of the results of their researches, and to give them opportunities for an interchange of opinion and experience. The first number now at hand promises well.

NOTES FROM WASHINGTON.

The Tariff Issue in National Politics.—Stamped Boiler Iron, Hoop Iron and Cotton Ties.

(From Our Own Correspondent.)

WASHINGTON, D. C., June 30, 1880.

The pronounced position taken by the Democratic Convention in its promulgation of party principles for the Presidential campaign, in declaring in favor of tariff for revenue only, causes much surprise at the Congressional Committee headquarters here. They had looked for a more ingenious presentation of this vital issue between the two parties, one which has figured so conspicuously in the political campaigns of more than three-quarters of a century, in order to cover the protective proclivities of New York, Pennsylvania, New Jersey, Connecticut, Massachusetts, Rhode Island, Delaware and Maryland, and the growing sentiment in this direction in Ohio, West Virginia, Tennessee, Georgia, Alabama and Louisiana, as well as the free trade and tariff reform notions generally of the West and South. It is feared that this enunciation of anti-tariff sentiment will operate injuriously in the States named, and will strengthen the Republican party in New York particularly, where the real Presidential battle will be fought. General Hancock, while he has no record on this subject, has, it is announced, in private letters received here, subscribed to all the articles of the Democratic faith for the campaign of 1880, and has also stated his approval in recent interviews with the party leaders. As a native of Pennsylvania, it was supposed that he would incline to a tariff that would protect his industries. He has said, however, that, in dealing with this subject, in the event of his election, he will be governed by the prevailing sentiment of the party who elect him.

The Supervising Inspector General of Steam Vessels, General Damont, is in constant receipt of complaints, from different manufacturers of boiler iron, respecting the evasion of the laws and regulations governing the United States steamboat inspection service, requiring certain standards of iron to be used in all boilers on steam vessels plying on navigable waters of the United States within the meaning of the statute.

In a recent communication from Assistant Secretary French to Mr. Thomas Moorehouse, of Philadelphia, this question of the use of stamped iron in boilers is set forth. The reply of Mr. French is to a request that a boiler made of unstamped iron be tested and permission given for its use for marine purposes, in case the result of inspection should be such that it might be just used with safety. Mr. French says: "In reply you are referred to the following extracts from the Revised Statutes in relation to this subject. Section 4428 reads as follows: 'Every boiler manufactured to be used on steam vessels, and made of iron or steel plates, shall be constructed of plates that have been stamped in accordance with this title,' and section 4430, as follows: 'Every iron or steel plate used in the construction of steamboat boilers, and which shall be subject to a tensile strain, shall be inspected in such manner as shall be prescribed by the Board of Supervising Inspectors, approved by the Secretary of the Treasury.' Mr. French adds that it will be seen from the foregoing that neither the department nor any member of the Steamboat Inspection Service has authority under the law to comply with the request.

Ex-Senator Scott, general solicitor of the Pennsylvania Railroad, was in the city yesterday in conference with the Secretary of the Treasury respecting the operations of the new law for the transportation of bonded goods by rail from ports of entry on the seaboard to certain designated cities inland at which a customs officer resides. The act of 1870 required the carrying companies as well as the shippers to give bonds. The new law requires only the carrying companies to give bonds, thus relieving individuals entirely from the inconvenience of giving bonds, and correspondingly increasing the facilities for the shipment of bonded goods. The new law authorizes the shipment of foreign ores to place of destination inland in open cars, greatly lessening the expense and delay in moving these ores, so much used with the home ores.

The cotton tie interest seems to be still agitated over the recent change of duty on cut hoop iron, and numerous letters are still being received at the department containing inquiries whether, under the ruling in the decision of April 17, 1880, respecting the duty on cut hoop iron bands of hoop iron cut to lengths and punched with holes at one end, are, when accompanied by buckles to be used with the bands of hoop iron as cotton ties, to be classed as manufactures of iron not otherwise provided for, or as subject to the specific rates imposed on hoop iron. In the instructions to collectors and other officers of the customs the secretary draws the distinction between cut hoop iron for cotton ties and simple cut hoop iron. He says in his ruling: "One description of cotton tie has a permanent stud, fastened in the end of the band, with corresponding holes in the other end. This article is considered by the department as being properly liable to the duty imposed on manufactures of iron. Other bands of iron are imported for cotton ties which in no wise differ from similar merchandise imported as cut hoops, except, in fact, that they are punched to a greater extent, and are sometimes painted. The buckles are not attached to them as imported, and the buckles form a separate branch of manufacture. It is held that the bands of hoop iron before referred to, whether accompanied or unaccompanied by the buckles, are liable, under decision 4496, to the duty imposed on hoop iron."

METALLURGICAL NOTES.

ELECTROLYTICAL TREATMENT OF THE ALLOYS OF PRECIOUS METALS.

It may appear strange that, after electrolytic methods have been used so long and so successfully for the deposition of metals, and have found a place in the laboratory of the assayer, they have not hitherto succeeded in gaining a foothold in metallurgy proper. It is only within recent times that attention has been directed to a method which promises in the future to become a valuable aid in the cheap and complete separation of the metals. Herr E. André, of Coblenz, Germany, some time since turned his attention to this field, and his plans have been further developed and experimented with by Mr. Paul Holder, of this city, to whom we are indebted for some data on the subject. Obviously, the advantages of electrolytic separation, the purity of the metals produced, will tell more when precious material is under treatment, and it is to the solution of the problems there offered that Messrs. Holder and André have directed their efforts, and they expect to supersede the costly and inconvenient methods of parting hitherto employed for refining and parting gold and silver alloys. The "retort" turned out by many of our mines by distilling the amalgam obtained during the process of amalgamation is often very impure, and the increase in the amount of base metals found generally in mines as greater depth is reached, threatens to swell the amount of this impure product considerably. Methods such as that proposed are, therefore, of growing importance. Herr André employs the current of a dynamo-electric machine, preferably among American machines the Weston, and uses as an anode directly the material to be treated. This anode consists of an elongated box of sheet lead, into which the impure alloy is filled, preferably in a granulated, finely divided state, thus affording a large surface. If necessary, this anode is incased in any suitable material to prevent the escape of fine metal. The cathodes, we are informed, consist, in certain cases, of a large number of copper wires, suitably spaced, suspended in a line parallel and close to the anode, the aim being to have a large working surface. When alloys containing copper are being treated, the solvent bath consists of one part of sulphuric acid diluted with 19 parts of

water, by measure, and other suitable alkaline or acid baths are employed according to circumstances. If silver forms a principal constituent of the alloy, its passage from the anode to the cathode must be prevented by the intercalation of equivalent quantities of metallic copper within a second diaphragm. The process is said to be in operation at the works of Messrs. Mason & Elkington, England, at Mansfeld, Oker, Hamburg and Frankfurt-on-the-Main, in Germany. A plant is to be put up in this country for working, per day, 1000 pounds of silver bullion holding 50 per cent. of copper, for the American Electro-Metallurgical Company, now being organized in this city to take control of Messrs. André and Holder's patents.

REMOVING SULPHUROUS ACID FROM FURNACE GASES.

In many processes of smelting, copper, silver, lead and other large amounts of sulphur are expelled in the shape of sulphurous acid, which is a source of much annoyance to inhabitants of the vicinity of the works. In this country it is only occasionally with gold and silver parting establishments, located in populous districts, that the protests against the "nuisance" cause embarrassment to their owners. The question has not yet, therefore, assumed in this country the attention which it has for many years claimed abroad, both on the Continent and England. The experience there gained may, however, prove valuable to those who are called upon to grapple with the problem in this country. Prof. Winkler, of Freiberg, has reported recently the results of a series of trials made at the Schöneberg Ultramarine Works to remove from the furnace gases of that establishment the sulphurous acid contained in it, ranging from 0.3 to 2 per cent. After a series of highly interesting though unsuccessful trials, from a commercial point of view, the following was adopted as being at once the cheapest and the most effective, as shown by two years' steady work: Three large chambers are filled with coarse fragments of limestone, offering a very large surface, over which copious amounts of water are run uninterruptedly. The gases ascend through the limestone, the water absorbing the sulphurous acid. Various salts of lime are formed which, owing to the large amounts of water present, are carried off by it, so that the action of the limestone is not impeded by incrustations. The gases are drawn through the chambers by a ventilator. At least 90 per cent. of the sulphurous acid is thus absorbed, the percentage being reduced from 0.360 per cent. by volume to 0.039 per cent.

MALLEABLE NICKEL.

Dr. A. Fleitmann of Iserlohr, Germany, writing to the *Berg u. Hütten. Zeitg.* gives the most detailed account yet published in regard to his well-known method of making malleable nickel and cobalt by the addition of magnesium. Herr Fleitmann has found that nickel containing zinc is, to a certain degree, malleable, and that such an alloy can be rendered malleable by smaller proportions of magnesium. In order to make the nickel zinc alloy, the pure oxide of nickel is very thoroughly mixed with 5 per cent. of oxide of zinc, the whole being reduced to metal which contains about 4 to 5 per cent. of zinc. The presence of zinc is said to act upon the nickel in a remarkable manner, a malleable metal being produced even without the addition of magnesium. It is likely that the brittleness of melted nickel is due to the presence of some cyanogen, and that both magnesium and cyanogen act by forming volatile cyanides, and possibly by decomposing any carbonic oxide present. After the addition of 1-20th per cent. of magnesium, the nickel zinc alloy is claimed to become completely malleable, and to be capable of being welded both to nickel, and to iron and steel. Messrs. Fleitmann & Witte have rolled sheet nickel 2 feet wide and have turned out nickel-plated sheet iron or steel. Thicker plates of nickel are welded to the iron or steel plates, heated to a high temperature, and are rolled out together in the ordinary way without scaling off. It should be noted that steel sheets thus nickel-plated cannot be hardened. The nickel-plated sheets are said to take a fine polish.

A REMARKABLE BLAST FURNACE RECORD.

Under date of June 18, 1880, Mr. Willard Warner, president and manager of the Tecumseh Iron Company, Tecumseh, Cherokee County, Alabama, writes as follows: "To-day we enter the sixth year of the Tecumseh Furnace's continuous blast in one hearth. The stack, a charcoal furnace, 60 x 12, was built in 1873 and put in blast February 19, 1874. Since then it has made only one stop, which was from April 5 to June 19, 1875, to put in a new hearth. The furnace is worked by hot blast, and has a closed top. The ore is chiefly brown hematite, the product being 8000 tons of foundry and mill pig per annum."

The Revolution in Buenos Ayres.

Our merchants in the South American trade do not yet observe any disturbance in business resulting from the outburst of hostilities in the Argentine Confederation. As yet no orders have been countermanded, and vessels depart from New York to their accustomed ports; though it is expected that they will discharge at Monte Video, the port nearest to Buenos Ayres, should the blockade continue. Thus far the advices received respecting the war have been by cable, but the mail now due from South American ports may bring correspondence of a different tenor.

The collision between Buenos Ayres and the national government is deeply deprecated; on account of its commercial bearings, as well as by reason of the paralysis which must overtake all the material interests of a country which has promised a grand development. Italian immigration has been spoken of as the "salvation of the country," giving a wonderful impetus to agriculture, especially in the production of wheat. Moreover, the disastrous effects of land speculations were being overcome by the new accessions of capital and labor. But now the hands on the dial of time are set back, perhaps for years.

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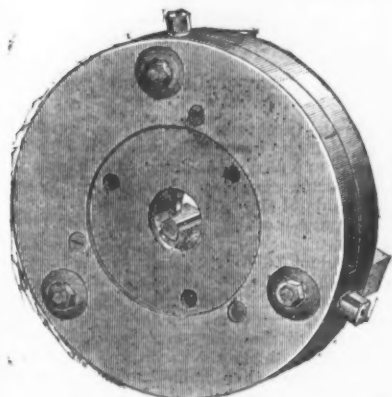


Fig. 5.—Back View.

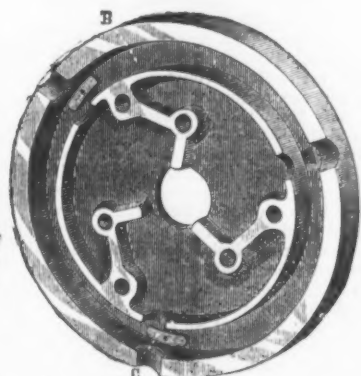


Fig. 2.—Back Plate.



Fig. 1.—Circular Rack.



Fig. 3.—Cam Block and Spring Washer.



Fig. 3.

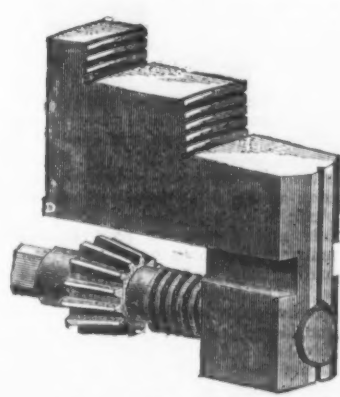


Fig. 4.—Improved Jaw.

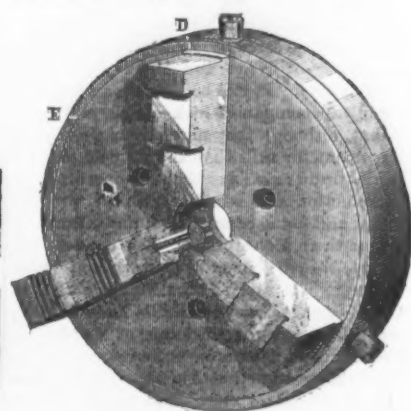


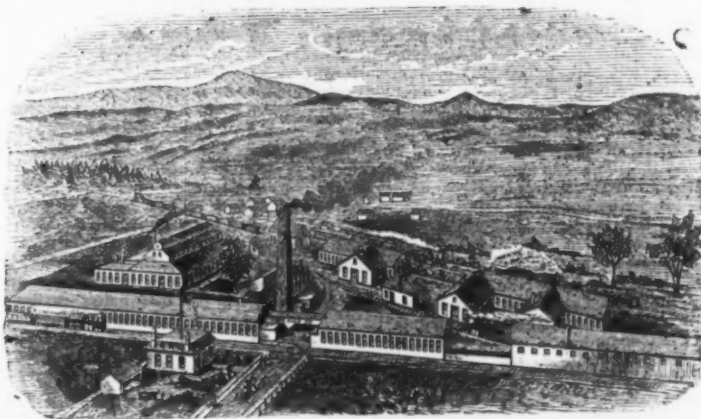
Fig. 6.—Front View.

THE IMPROVED HOWE SCALES.

Made in Every



Variety



Works at Rutland, Vt.

and Adapted to any



Standard.

The highest Awards have invariably been given the Improved Howe Scales wherever exhibited in competition with other makes.

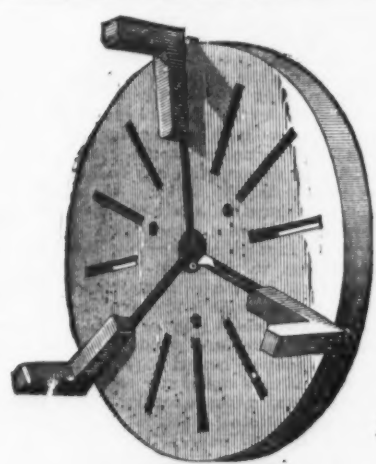
OFFICES:

PAGE, FARGO & CO., 325 Broadway, New York.

PAGE, FARGO & CO., 213 Market Street, Philadelphia.

BORDEN, SELLECK & CO., 97 Lake Street, Chicago.

J. FRED. DENNIS, 8 & 9 Holborn Viaduct, London.



Front View.

THE HORTON CAR WHEEL CHUCK.

This Chuck can be attached to a boring machine table, or lathe, and will hold a car wheel 37 inches in diameter and less. The jaws are made long to fit both tread and flange of car wheels, thus truing them both ways. For general machine work it is very useful, and will hold firmly any work that can be held in a Chuck.

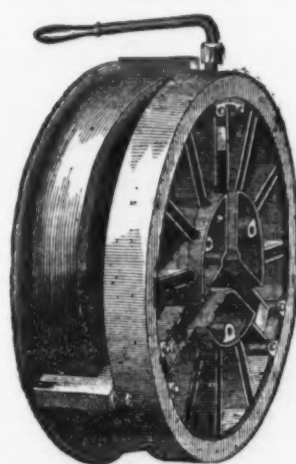
THE E. HORTON & SON CO.,

MANUFACTURERS OF

THE HORTON

LATHE CHUCK

Windsor Locks, Conn., U. S. A.



Back View.

THE HORTON CAR WHEEL CHUCK.

This cut represents the Horton Car Wheel Chuck holding a car wheel in proper position for boring, the flange and tread of the wheel assuming a true position on the jaws. For accuracy and ease of operation this Chuck has no equal.

THE HARTFORD MACHINE SCREW CO.,

MANUFACTURERS OF

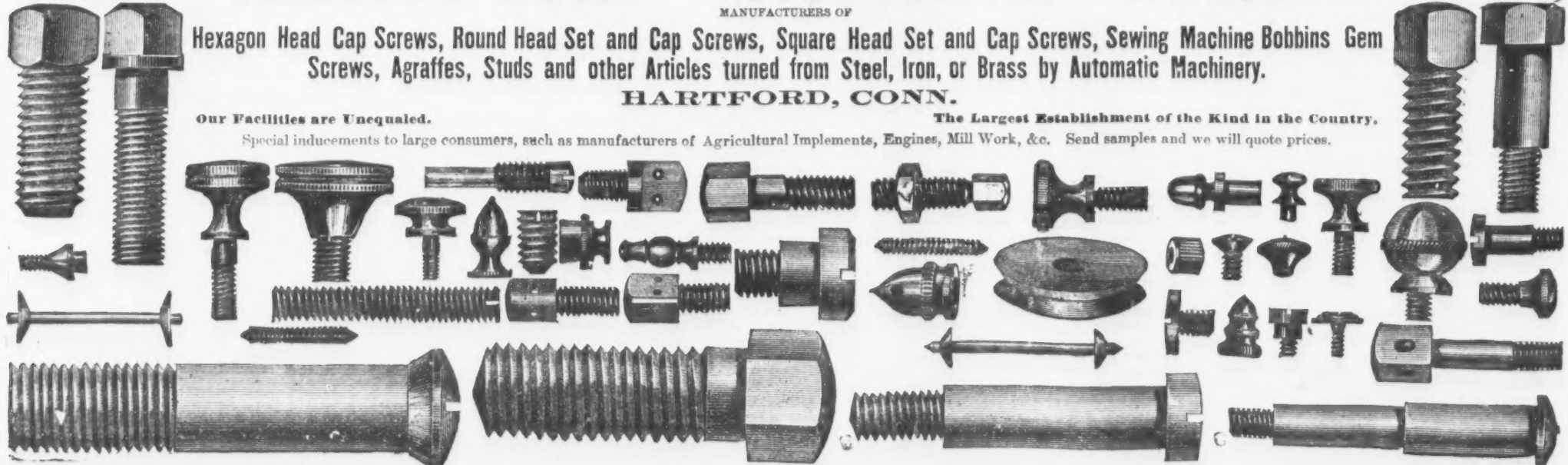
Hexagon Head Cap Screws, Round Head Set and Cap Screws, Square Head Set and Cap Screws, Sewing Machine Bobbins Gem Screws, Agraffes, Studs and other Articles turned from Steel, Iron, or Brass by Automatic Machinery.

HARTFORD, CONN.

Our Facilities are Unequaled.

Special inducements to large consumers, such as manufacturers of Agricultural Implements, Engines, Mill Work, &c. Send samples and we will quote prices.

The Largest Establishment of the Kind in the Country.



READING HARDWARE CO.'S NEW APPLE PARER, "THE GEM."

In addition to our regular line of Apple Parers for the present season, we have placed in the market

AN ENTIRELY NEW MACHINE, THE GEM,

and among its merits the following are deserving of notice:

In its construction **SIMPLICITY OF ARRANGEMENT** is combined with **EFFICIENCY OF OPERATION**.

Though of small size, all the **ADVANTAGES** of larger Parers, including the "PUSH OFF," are found in its superior mechanism.

It takes off A **VERY THIN PARING**, and performs the operation thoroughly, without regard to the size of the apple, whether large or small.

Great care being exercised in its manufacture, all the parts will be found to work well together, and no disarrangement or breaking while in use need be apprehended.

We again take pleasure in announcing to the trade that our

IMPROVED '78 READING APPLE PARER. WITH ADJUSTABLE CURVED KNIFE,

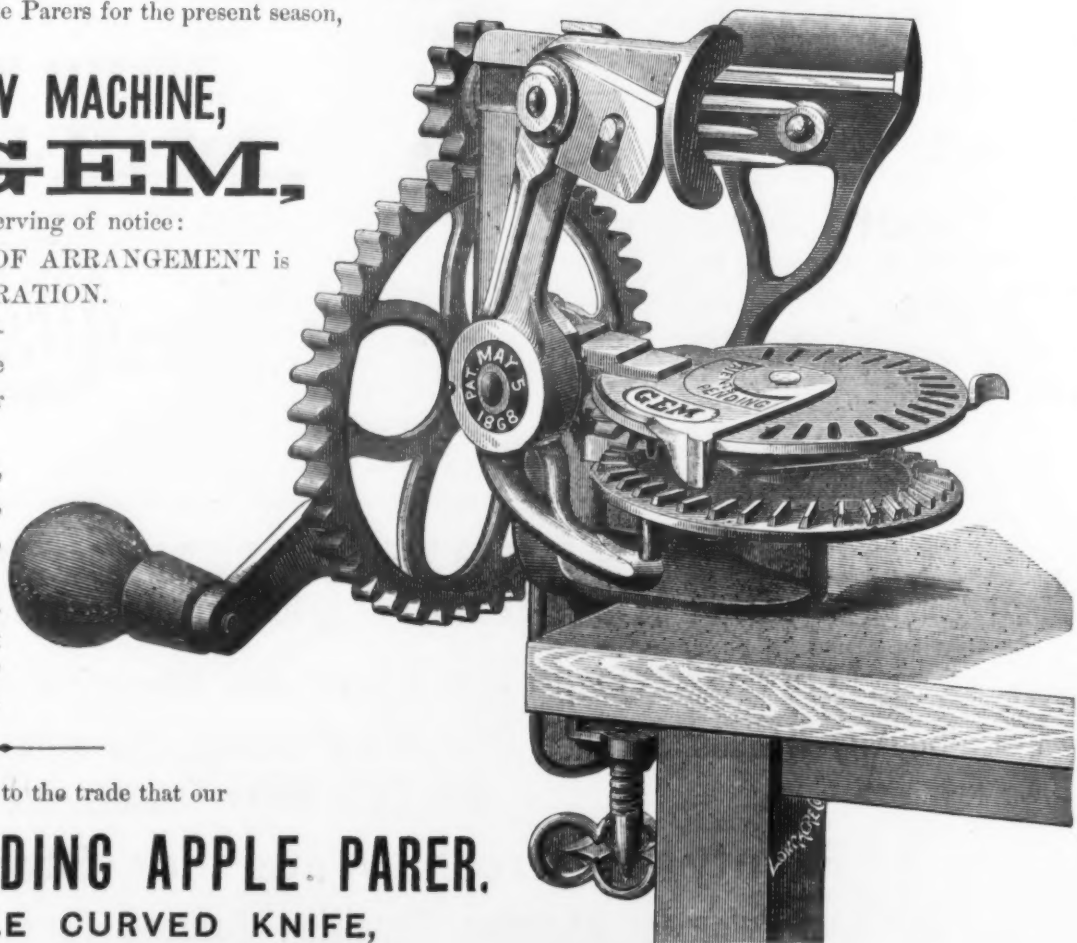
Now ready for the market, has many and great advantages over the Parer manufactured and sold last season. The following are deserving of notice:

The large knife is now made of a **CURVED SHAPE**, which enables it to pare much more effectively, without regard to the **SIZE OF THE APPLE**, whether **LARGE** or **SMALL**, and can be so adjusted by merely **MOVING THE KNIFE**, so as to regulate the **THICKNESS** of the paring to be taken off.

The peculiar shape and position of the **EXTRA KNIFE** renders it able to remove **ALL PARINGS** from the **BASE** of the apple before the operation of the principal knife.

Being attached to the body of the parer, **WITHIN** the large crank wheel, the small wheels are in their action **MORE DIRECT**, and **REVERSE MOVEMENTS** are prevented by the **RATCHET ATTACHMENT**.

Manufacturers of the '72, '74 and '75 Reading Apple Parers, whose well-known reputation will be maintained as in the past.



All the parts of the machine, including the handle, are adjusted and **READY FOR USE**, thereby avoiding the necessity and trouble of putting it together when required.

Requiring less material and an approximately lower cost in its manufacture, it can be sold at a **REDUCED PRICE**.

Packed one each in a paper box, one dozen boxes in a wooden case.

To the trade we would say: If you want a parer that

Will Sell Well and Give Satisfaction,

ONE THAT COMBINES

Neatness of Design,

Superiority of Finish,

Rapidity of Execution

AND

Efficiency of Operation,

Try **"THE GEM,"**

And you will not be disappointed.



PATENTED

DEC. 2ND 1862.

MAY 15TH 1868.

MARCH 5TH 1872.

FEB. 17TH 1874.

MAY 31ST 1875.

OCT. 19TH 1875.

NOV. 14TH 1875.

MAY 22ND 1877.

PATENT PENDING.

**IMPROVED
CURVED KNIFE
1880.**

**'78 READING
APPLE PARER
PATENTED.
MADE ONLY BY THE
READING
HARDWARE CO.
READING PA.
U.S.A.**

The body of this Parer and the different parts are **MADE HEAVY** and **STRONG**, with an **ADDITIONAL PLATE** to the clamp to secure it more firmly in position, the whole being of the most durable character, calculated for **LONG** and **STEADY USE**.

With a movement steady and uniform it takes off a very thin paring, and by the **IMPROVED LENGTH** of the push-off entirely removes the pared fruit **WITHOUT HANDLING**.

The machines are now coated with a **NEW PREPARATION**, which allows **MORE FREEDOM** of the working parts, and **WITHOUT THE OBSTRUCTION UNAVOIDABLE** by the old process of finishing.

The **SQUARE SHAFT** prevents **TURNING** in the wheels of the machine, and each part being **NUMBERED** can be supplied.

Each machine is packed separately in a paper box, and one dozen boxes in a wooden case.

Also, a complete line of Bronze Metal, Bronzed Brass and Japanned Hardware of the most approved design and every variety of finish, with a full assortment of Stationery Goods.

With a determination to maintain our position as Apple Parer manufacturers, we shall supply the trade with machines calculated by their careful construction to give satisfaction, and thereby avoid all cause of complaint from their customers.

For prices and terms, address

READING HARDWARE COMPANY, Reading, Pa., U. S. A.



HALL'S PATENT DOUBLE COMPOUND LEVER CUTTING NIPPERS.

NEAT, HANDY, POWERFUL AND DURABLE.

Every pair warranted to cut steel wire.
Extra parts supplied to replace those damaged by
wear or accident at a trifling cost.
Can be adjusted by any one in a few seconds.
Made entirely of steel, drop forged.

Send for Price List.

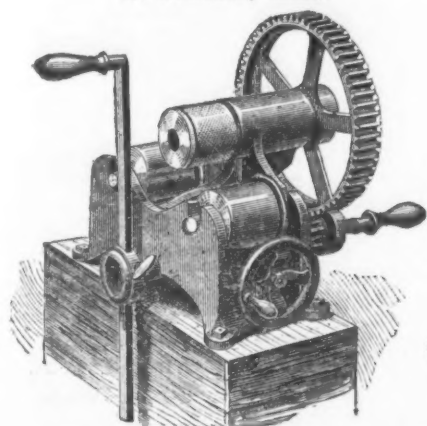
Manufactured by
THE INTERCHANGEABLE TOOL COMPANY, of New York.
Manufacturers of Special Tools and Machines on the Interchangeable System.

All orders should be addressed to

A. CUSTAM, Gen'l Agent, 32 Howard St., New York.

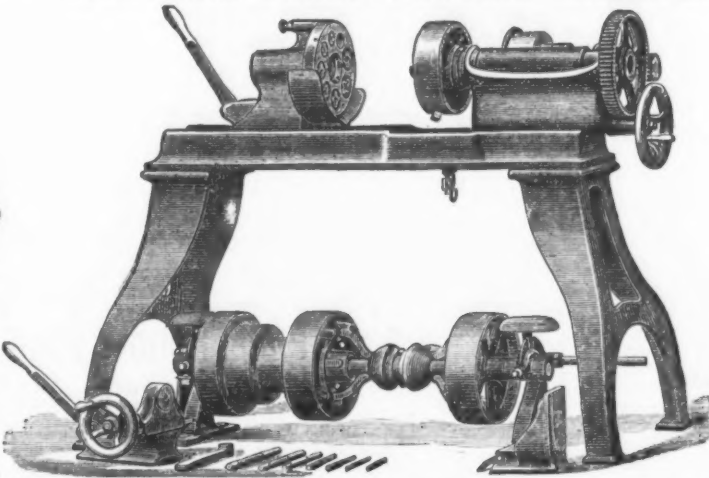
WILEY & RUSSELL MFG. CO.,
Greenfield, Mass.

LIGHTNING SCREW-CUTTING MACHINERY and GREEN RIVER TOOLS.



Send for Illustrated Price List.

Agents in London, Eng., Messrs. SELIG, SONNENTHAL & CO.



BEARDSLEY SCYTHE COMPANY, West Winsted, Conn.

Manufacturers of the well-known brands of

**German Steel, Cast Steel and Silver
Steel Grass Scythes.**

ALSO THE

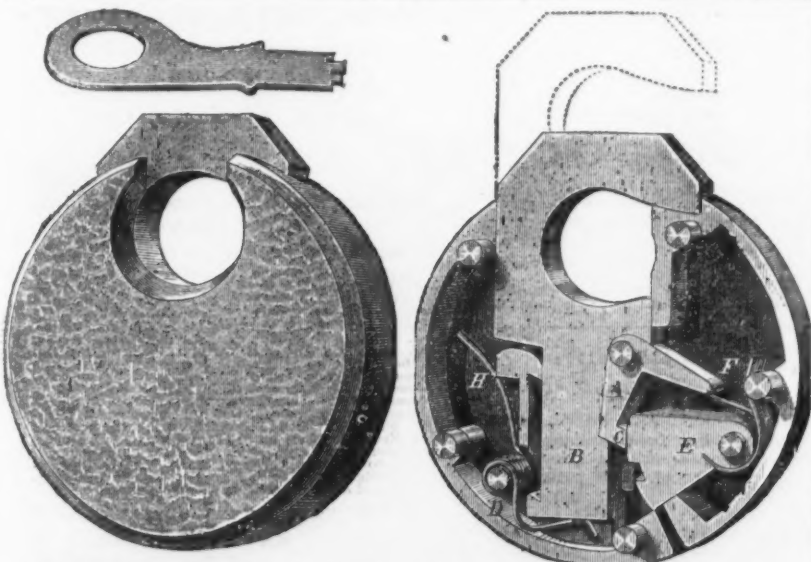
**Clipper, Emperor, Beardsley's Golden Trimmer,
Conqueror, Dutchman, Waldron, &c.**

ALSO

**Silver Steel, Clipper & Harvest Victor Grain Scythes,
Common Pattern & Spear Point Hay Knives.**

ALSO

Corn Knives, Bush & Weed Scythes.



BRASS PADLOCKS.

GREATLY IMPROVED.

For simplicity, compactness, durability, convenience and security they have no equal. Appreciated by all who use them. The best and most economical Padlock for all uses extant. Springs now made of the celebrated Phosphor-Bronze. We make these Locks with Master Keys when so ordered. Largely used by the U. S. Government, Railroads, Corporations, &c.

D. K. MILLER LOCK CO.,
821 Cherry Street, Philadelphia.

PERIN & GAFF MFG. CO.,

MANUFACTURERS OF

**FLUTING MACHINES,
CAST BUTT HINGES,
STRAP AND T HINGES,
PICKS AND MATTOCKS,
SLEDGE HAMMERS,
FURNITURE CASTERS,
SAD IRONS,
MOLASSES CATES,
PIANO STOOLS, &c.
CINCINNATI, OHIO.**

TORCH LAMPS.



Swinging style; always right side up; simple in construction. Frame and socket made of one piece, without rivets or solder. Strong and not liable to get out of order.

Order Early and Secure the Best in Market.

Prices quoted upon application. Address,
SIDNEY SHEPARD & CO.,
Proprietors Buffalo Stamping Works,
BUFFALO, N. Y., and CHICAGO, ILL.

THE TURNER & SEYMOUR MFG. CO.,
WOLCOTTVILLE, CONN.,
MANUFACTURERS OF

**Upholsterers', Stationers' House Furnishing & Fancy
HARDWARE AND NOTIONS.**



THE IMPROVED 'FAMILY' EGG BEATER
Both Beaters revolve, giving the double
motion necessary to a perfect beater.

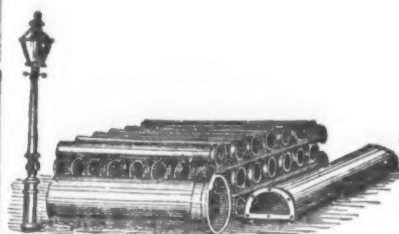
We take pleasure in calling the attention of the trade to our
Improved Family Egg Beater.

It is made the same as our former Beater, except that we use parallel round wires in place of the flat wire. It is more easily cleaned than the flat wire beaters. It is equal to any beater in the world, while the price is very low. We guarantee that the Improved Egg Beater is not an infringement on the Dover, or any other beater.

Our **Cast Scissors and Shears** are superior in shape, variety and finish to all others. We have added to our former line a great variety of nickel-plated Scissors and Shears, Nut Picks, Nut Crackers, Fruit Knives, &c. We respectfully solicit the privilege of giving estimates on novelties in Brass or other metals, and on small iron castings.

SPECIALTIES.

Shade Fixtures in great variety.
Picture Nails, Knobs, Hooks, Cord Wire, &c.
Twine Boxes, Escutcheon Pins, Curtain Rings, Nutmeg Graters.



R. D. WOOD & CO.
Philadelphia,
Manufacturers of

Cast Iron Pipe

FOR WATER AND GAS.

Lamp Posts, Valves, &c.,

Mathew's Pat. Anti-Freezing Hydrants.
400 CHESTNUT STREET.

10,000 Sold the First Year.
THE BEST ADJUSTABLE BAG HOLDER
In the World.

PRICE ONLY \$1.50.

Sent free, on receipt of the price, anywhere in the United States.

It is made of iron, will fit any sack, wide or narrow, and will last a lifetime. Sold by Hardware and Agricultural Implement dealers everywhere. A large discount to the trade and agents. Your orders respectfully solicited, and agents wanted for this best selling article in the market.

Address,
L. JEFF. SPRENGLE,
Sole Manufacturer,
Ashland, Ohio.

Who would do without it for \$1.50? The platform does not go with the holder; it is extra if wanted.

The Most Durable and Best Selling
Bucket for Chain Pumps.

It has no valves to become obstructed and no screw joints to become immovable by rust.

Advantages of the Crosby Bucket over all others:

1. It has an air chamber on top, which conducts the air to the bottom of the well.
2. It is self-expanding, the base of the bucket being 1/4 of an inch larger at bottom than top in the tubes, which allows it to expand, and the groove in the side to contract.
3. The wear comes on the whole side, and not on the extreme edge like other buckets.
4. It contains more solid rubber than three of any other manufacture.

No charge for territorial rights. Send for Price List. Agents wanted in every county. Address
A. D. CROSBY, Patentee and General Agent,
Cuba, Allegany Co., New York.



FLANDERS' PATENT IMPROVED CRANK PIN MACHINE,

For turning off Crank Pins in position and while the wheels are under the engine. No railroad company should be without it. Manufactured and for sale in the

L. B. FLANDERS MACHINE WORKS,
1025 Hamilton St., Philadelphia.
Descriptive circular on application.

TACKLE BLOCKS.

Rope and Iron Strap of all kinds. Lightest and most durable for Ten-Pin Balls.

Wm. H. McMillan & Bro.,
Office, 113 South Street, New York.
Factory, 32 to 40 Penn St., Brooklyn, N. Y.

GEORGE W. BRUCE,
1 Platt Street, New York.

Maynard's Planters', Yankee, Hilling and Bog Hoes, also Brades', Elwell's and others. An unrivalled assortment.

John Carver,
MANUFACTURER OF
CAULKING IRONS,
Cotton, Freight and Hay Hooks,
No. 44 North Third Street,
Near First, BROOKLYN, E. D.

Recent Consular Reports.

The following information has been furnished by the Department of State:

The Charge d'Affaires of the United States at Bern, Switzerland, has furnished a comparative table, published by the Swiss Bureau of Statistics, of the exportations from Switzerland to the United States from 1864 to 1879, inclusive. The increase of exports in 1879 over 1878 was 27.37 per cent. There was an increase in 1879 of 23 per cent., compared with the annual average from the years 1864 to 1878. The value of watches and their accessories exported was 52 per cent. below the average for the period of 1864 to 1878, though there was an increase of 28 per cent. over the average of the years 1876 to 1878. The American demand, in 1879, for Swiss watches and works amounted to but 5,492,098 francs in value, against an annual average of 11,000,392 francs in the previous 15 years. Embroideries exceeded by from 2,000,000 to 3,000,000 francs the large exportations of 1877 and 1878. There was also quite an increase in leathers. The present year gives promise of further improvement.

The Minister of the United States at Vienna, Austria, informs the department that the large and increasing emigration among the peasantry of Hungary is attracting public attention, and that the advisability of checking it, by granting public lands in Hungary to the destitute, is being discussed. The people in the region of the county of Garos are emigrating en masse. This spring over 3000 have gone from one county, of whom 1007 have left their families and 560 were held to render military service. Petitions for their restriction are being presented.

Mr. Denny, the Consul General of the United States at Shanghai, in a recent dispatch, states that an American manufacturing company has met with remarkable success in the introduction of their clocks in China. They sent out an agent with 400 or 500 cases of sample clocks, running six and twelve to the case, to establish a house at Shanghai, and within four days after he opened his sample rooms he had disposed of every one. The agent informed Mr. Denny that in the same time he could have sold at least 1500 or 1600 cases. Mr. Denny thinks that a large field is now open to American manufacturers in this particular article, and that with an earnest endeavor on their part to meet the wants of the Chinese market, they can control the trade.

The Consul of the United States at Tripoli has furnished the department with a report of the commerce of Tripoli for the quarter ending March 31, 1880. During that period the exports amounted in value to \$377,173.11, the imports to \$363,199.31. There were \$77,200 worth of cotton goods imported; \$19,686 of woollens; \$76,510 of cereals; \$23,211 of oil, and \$2386 of petroleum. American flour in small quantities was received. The wheat and barley crops are unprecedented. The commercial transactions were somewhat deranged, owing to the depreciation in metallic currency.

A railroad accident from a most singular cause happened last week at the bridge over the Scioto River, near Chillicothe, on the Dayton and South Eastern Railroad. A bridge watchman lay down beside the track and went to sleep with one arm over the rail. A gravel train backed down upon him, and the entire train was thrown off the track. Five men were thrown into the river, and 20 others into the debris of the wrecked train.

Special Notices.

HAVE YOU READ THIS?

JENNINGS' DISCOUNT TABLES.

(1st to 84th and all the combinations.)

We and them correct and wonderfully "labor saving."—Sargent & Co., New York.

To further introduce the work, the Present Edition will be sold at half price, as follows:

Counting House Edition, 1000 copies, \$1.00

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Currency may be sent by mail at publishers' risk.

Address, B. H. JENNINGS, Deep River, Conn.

JOHN E. SWAN & BROTHERS,

IRON MERCHANTS,

Glasgow and Middlesbrough,

Exporters of all brands of

Scotch & English Pig Iron.

c. f. i. to America and f. o. b. British ports.

Old Iron Rails, Puddled Bars

AND MANUFACTURED IRON.

ULSTER IRON.

100 bars best Ulster Iron, in 16-foot lengths, 2 1/2

inches diameter, for sale at 2 1/2 c. per lb. by the

bar, or 2 1/2 c. per lb. for and not free on board at

Worcester, Mass.

FORSALE & CO.,

Machinery and Machinery Dealers,

Manchester, N. H.

WANTED TO BUY,

A Hardware or Housefurnishing Store, for CASH.

Will buy a new stock from the person who will

find me a town to open in. State price. All will

be kept confidential. Address

HARDWARE, Box 19,

Office of The Iron Age, 83 Reade St., New York.

HAMMACH & DELIUS,

Hamburg, Germany,

62 Alter Wall,

Solicit correspondence with American Manufactur-

ers and Inventors in regard to representation

in European countries.

FOR SALE.

One second hand 2000-lb. Steam Hammer. Make,

Ferris & Miles. Apply to

A. & P. ROBERTS & CO.,

255 South Fourth Street, Philadelphia

FOR SALE.

STEAM ENGINE five-horse power, upright,

separate bed, nearly new. Will sell cheap and on

easy terms. C. N. MARCELLUS & CO.,

91 Liberty St., New York.

Special Notices.

A LARGE ASSORTMENT OF New and Second-Hand Machinery.

STEAM ENGINE MACHINERY.

One Delamater Sugar-house Engine 26 in. x 48 in.

One Corliss 40 horse power, 10 in. x 24 in.

Five Horizontal Engines, new 9 in. x 16 in.

Four " " " " 8 in. x 12 in.

One Portable Engine, 5 horse power.

One Horizontal Engine, 11 in. x 18 in., Whitehall

& Hampden.

One Upright Engine, 16 in. x 16 in. [forty.

One Horizontal Engine, 15 1/2 in. x 30 in., Todd & Raf.

One Upright Engine, 7 1/2 in. x 10 in.

One " " " " and Boiler complete, 5 H. P.

One 25 h. p. Horizontal Engine and Upright Boiler.

One Boiler, 5 ft. x 15 ft. 8 1/2 in. Tubes.

Two " " " " 5 ft. x 14 1/2 ft. 100 3/4 in. Tubes.

MACHINISTS' TOOLS.

One Gear Cutter and Milling Machine combined

(new.)

One Vertical Boring Mill, bore from 26 to 30 inches.

One Shaper, 6-inch stroke, 10 columns.

One Turn Table and Boring Mill, 11 feet between

Two Slabbing Machines.

One Lathe, 18 in. x 8 ft., Screw Cutting.

One " " " " 14 in. x 5 ft.

One Merrill Compressed Air Hammer, Hotchkiss

Patent.

One Punch and Shears combined, will punch 1 1/2-

inch hole in 1-inch iron in the center 30 in.

One large Shears, will cut 1/2 iron any size.

Two Enslay Drills.

One New Haven Mach. Co. Drill, will bore in center

60 in.

One New Haven Mach. Co. Drill, will bore in center

30 in.

One New Haven Planer, 37 in. x 9 ft.

7500 lbs. 1/4 Plate Iron, for safes.

One Lathe, 30 in. x 20 ft. bed.

One " " " " 28 in. x 20 ft. "

One " " " " 16 in. x 7 ft. "

One Pattern Makers' Lathe.

One Planer, 42 in. x 16 ft.

One " " " " 25 in. x 6 ft. "

One " " " " 24 in. x 5 ft. "

One Crank Planer, 18 in. x 3 ft.

One Travis' Boring Machine.

Eighteen Drilling Machines.

One Root Blower.

One Bogardus Mill, No. 5.

One Pair Hand Shears, Fond's Patent.

One Large Power Punch for bridge work.

One 200-ton Hydraulic Press and Pump.

One Dudgeon Beam Punch.

One Upright Drill, to the center of 64 in.

One " " " " 42 in. "

One Hand Punch to the center of 36 in.

One " " " " smaller.

One hundred Vices.

PUMPS.

One Knowles Special Pump, No. 7.

One Woodward Steam Pump, No. 4.

One Guild & Garrison Steam Pump, No. 3.

One Woodward Steam Pump, No. 1.

Six Hardick Steam Pumps, from No. 1 to No. 4.

J. GRAY'S MACHINERY DEPOT

37 Dey Street, New York, U. S. A.

To Car Builders, Iron Workers

and others.

Large Manufacturing Establishment

FOR SALE OR LEASE,

At a Great Bargain to a Good Party.

The Construction and Repair Shops formerly

occupied by the Camden and Amboy Railroad Co.,

covering three acres of ground, located on the

Delaware River at Bordentown, N. J.

Address BOARD OF TRADE for descriptive

circular, Bordentown, N. J.

New or Second-Hand

TOOLS WANTED.

A large assortment of Machinists' Tools, including

large Boring Mill with two heads for turning.

Also, 600 feet of 8 or 9-inch Deck Beams.

Address, with full particulars and lowest cash

price, P. O. Box 345, Chicago, Ill.

FOR SALE.

200 to 400 tons 45-lb T Rail, slightly worn and fit to

relay.

30 tons second-hand 9-inch Deck Beams.

10 tons second-hand 1 1/4-inch Truss Rods, with nut

at each end.

100 tons assorted Angles, 1 inch to 6 inch.

150 " " Channels, 2 inch to 15 inch.

100 " " Bar Iron, rounds, squares and

flats. Apply to

A. & P. ROBERTS & CO.,

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FOR SALE.

A works completely equipped for the manufac-

ture of Carriage Axles. Is well located in relation

to coal and iron, also very accessible to market.

Address E. P. BULLARD,

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The Sherman Process Co.

9 Pemberton Square, Boston, Mass.,

Issue Licenses to use the Process for the

Manufacture of Iron and Steel

In the Bessemer Converter, Crucible, Siemens

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The use of this Process improves the quality of

the product, saves fuel and labor, and does not re-

quire any change in furnace or manner of working

See page 17 of The Iron Age of Oct. 25th, 1877.

For Sale.

1250 TONS BLAENAVON STEEL RAILS,

50 pounds per yard, Sandberg's section, just

landed in New York. Apply to

NAYLOR & CO.,

99 John Street, New York.

FOR SALE.

RICHMOND CUTLERY WORKS. Good Engine

and Boiler, Power Hammers, Punching Presses,

and all kinds of machinery generally used in a

cutlery and edge-tool manufactory. If sold soon

for cash will be sold at a great bargain. Address

RICHMOND CUTLERY CO.,

Richmond, Ind.

Bissell & Welles,

Wholesale Hardware Auctioneers,

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Sales held weekly for the trade. Consignments

solicited. We refer to the leading Manufacturers

and importers.

Special Notices.

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54 CLIFF ST.,

NEW YORK,

OFFER

SPECIAL INDUCEMENTS

IN

QUALITY AND PRICE

IN

English

and

Scotch

Foundry

PIG IRON.

For Sale.

56 in. x 10 ft. Engine Lathe. N. Y. S. Engine Co.

30 in. x 20 ft. Engine Lathe. Sellers & Co.

12 in. x 6 ft. Engine Lathe. Sellers & Co.

Three Column Drills, 18 in., 12 in. swing.

Suspension Drill. Springfield Tool Co.

For Lathe. American Machine Co.

Two Polishing Lathes, double ended.

Two No. 6 Sturtevant Blowers, one exhaust.

2-in. Pipe Cutter. Morris, Tasker & Co.

Vertical Engines, 5 x 6, 7 x 10, 8 x 8, 12 x 12.

Vertical Boilers, 3 to 20 horse power.

Horizontal Engines, 4 to 40 horse power.

Ingersoll Rock Drill and 50 ft. of Hose.

A. G. BROOKS & WINEBRENER,

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For Sale.

A FERRIS & MILES STEAM HAMMER, in

good condition. Cylinder 5 x 12 in. Price moderate.

MADEN & COCKAYNE FILE CO.,

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Canadian Mines, Iron, Lead, &c.

Iron, Phosphate, Lead and Gold Mines for sale.

Mining properties, ores and minerals bought on

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Address is

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Cities and Centers of Europe.

TERMS ON APPLICATION.

12, L. J. Acorn Butts, Nos. 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 84

are decidedly profitable. Wyoming Coal is quoted at \$4.50 @ \$4.25 for Store, and \$4 for other sizes. Lehigh is \$5 for Lump, and \$4.25 for other sizes, except Chestnut, which is \$4. Lump and Steam Schuylkill Coal is quoted at \$5, with other sizes at \$4 @ \$4.25. Freights do not show any marked change. Eastern ports are about 80¢, while New Haven remains at 60¢ and Providence at 90¢.

OLD METALS, PAPER STOCK, &c.

We have but little to note in these markets this week. The Old Rag and Paper Stock market is possibly a trifle steadier than at our last writing, but the change is not quotable.

The purchasing prices offered by dealers for Old Metals are as follows:

Copper, heavy.....P. B. \$0.16 @.....
Copper Bottoms....." .18 @.....
Yellow Metal....." .04 @ .08 1/2
Soft W. V. L....." .11 @ .12
Brass, light....." .08 @ .08 1/2
Composition, heavy....." .13 @ .14
Lead, heavy....." .03 1/2 @ .04
Tin Lead....." .03 1/2 @ .03 1/2
Zinc....." .04 @ .04 1/2
Pewter, No. 1....." .10 @.....
Pewter, No. 2....." .07 @.....
Wrought Iron.....P ton 16.00 @ 18.00
Light....." 10.00 @ 12.50
Steel Plate....." 10.00 @ 11.00
Machinery do....." 15.00 @.....
Grate Bars....." @.....

The prices current for Rags, &c., are as follows

Canvas, Linen.....P. B. 3 1/2¢ @.....
White Cotton....." 3 1/2¢ @.....
 No. 2....." 2 1/2¢ @.....
White, No. 1....." 3 1/2¢ @ 3 1/2¢
 No. 2....." 2 1/2¢ @.....
Seconds....." 1 1/2¢ @ 1 1/2¢
Soft W. V. L....." 1 1/2¢ @ 1 1/2¢
Mixed Rags....." 2 @ 2 1/2¢
Gunny Bagging....." 1 1/2¢ @ 1 1/2¢
Gunny Butts....." 2 1/2¢ @.....
 No. 1....." 2 1/2¢ @.....
Book Stock....." 2 1/2¢ @.....
Newspapers....." 1 1/2¢ @.....
Waste Paper and Scraps....." 5¢ @ 5¢
Kentucky Bale Rope....." 4 @ 4 1/2¢

IMPORTS.

Hardware.

Alexandre F. & Sons,
Anvils, 6
Cases, 2
Atlas S. S. Co.
 Hdw., cs., 1
Barbour Brny
 Mach'y, cs., 1
Bernard H. O.
 Mds., cs., 1
Blumenthal & S.
Cutlery, cs., 3
Boker Hermann & Co.
 Hdw., cs., 23
Bkdhke W. D.
Grindstones, p's, 132
Brookline W. D.
 Steelware, cs., 1
 Grindstones, rolls, 90
Brown W. H. & Bro.
 Case, 1
Charles R. P.
 Mds., pkgs., 1
 Grindstones, 300
Cheney Bros.
 Mach'y, cs., 1
Comstock E. L.
 Cases, 1
Crowley & Co.
 Case, 1
Curley J. & Bro.
 Case, 1
Crossman W. H. & Bro.
 Cases, 2
Dodge Henry,
 Case, 1
Dunham Austin & Sons,
 Mach'y, cs., 6
Florence Mfg. Co.
 Mds., pkgs., 1
Friedman W. & Lauter-
 Jung.
 Mds., pkgs., 6
Furness, Bannister &
 Co.
 Case, 1
Godfrey C.
 Cases, 3
Graef Cutlery Co.
 Cases, 1
Hall, Nicol & Gran-
 berry,
 Case, 1
Harley & Graham,
 Mds., pkgs., 2
Arms, cs., 6
Irwins S. & Sons,
 Case, 1
Kinney F. S.
 Mach'y, cs., 2
Livingstone, W. & F.
 Grindstns., casks, 20
Marvel W. D.
 Cases, 3
Merchants' Dis. Co.
 Mach'y, cs., 22
Milliken Bros.
 Wire, b'ls., 1246
Moore Henry
 Files, casks, 7
Moss, P. W.
 Mds., csk., 1
Pacific Mail S. S. Co.
 Safes, 2
Raston A. & Co.
 Case, 1
Raoux, C.
 Coal, cs., 1
Rogers Henry,
 Mds., cs., 7
Schoverling & Gaies,
 Mds., pkgs., 6
Schuyler & Duane,
 Cases, 2
Siebold H. & Co.
 Machines, cs., 8
Spelman & Bros.
 Cases, 3
Strasburg, Pfeiffer &
 Co.
 Cases, 13
Taylor Thos.
 Cutlery, cs., 2
 Cutlery, casks, 2
Thornton J. & Co.
 Cases, 2
Wetzlar M.
 Mds., pkgs., 4
White John S.
 Mach'y, cs., 8
Wichelous & Hilger
 Hdw. Co.
 Hdw. and cutlery,
 casks, 37
Witte & Wagon & Bro.
 Mds., cs., 8
Wolff, Kahn & Co.
 Gun barrels, cs., 5
Grdor,
 Cases, 12
 Casks, 2
 Cutlery, cs., 2
 Cutlery, casks, 2
 Grindstns., casks, 45
 Mach'y, cs., 10
 Mach'y, pkgs., 25
 Wire, lots, 1

Iron.

Barling Bros. & Co.
Scrap, a lot
Bars, 1229
Brown Bros. & Co.
Bars, 6633
Wire, tons, 2200
Bundles, 254
Wire rods, b'ls., 604
Carter H. A.
Scrap, tons, 223
Bars, 1229
Wire rods, b'ls., 464
Coddington T. B.
Sheet, b'ls., 172
Crosby Bros.
Pig, tons, 360
Tin plates, 372

Drexel, Morgan & Co.
Pig, tons, 500
Elliott & Sons,
Dre, tons, 122,500
English Black Metal of Rio
 Janeiro,
 Old rails, tons, 211
 Old iron, tons, 175
Hamill & Gillespie,
Scrap, tons, 25 1/2
Homer & Sprague,
Scrap, tons, 42 1/2
Irwin Richard & Co.
Pig, tons, 250
Leavcraft, tons
Old iron, b's, 6
Old iron, p's, 52
Lee Jas. & Co.
Pig, tons, 100
Lundberg G.
Bars, 3176
Bundles, 4233
McCoy & Saunders,
Black plate, cs., 30
Sheet, b'ls., 10
Moreland & Co.
Old rails, p's, 4219
N. Y. National Banking
 Association,
 Hoops, b'ls., 25,562
Perkins, Livingston &
 Co.
 Spiegel iron, tons
Rivera de J. & Co.
Tons, 16
Old iron and iron
Wire, 101 c, tons, 70
Sanders Bros.
Pig, tons, 925
Williamson Jas. & Co.
Pig, tons, 200
Order,
Bars, 15,427
Bundles, 439
Cases, 872
Cases, 16,500
Coils, 925
Old iron, p's, 1563
Old rails, kilos
35,875
Old cases, tons, 13
Old scrap, tons, 1737
Pig, kilos, 862,750
Pig, tons, 752
Scrap, tons, 1638
Sheet iron, pkgs.,
3550
Spiegel iron, tons,
Plate plates, 75
Tons, 20
Steel.
Brown W. Bn.
Bundles, 663
Cases, 24
Mas on Mfg. Co.
Bundles, 132
Moore Henry,
Bundles, 44
Moss, P. W.
Bundles, 35
Bars, 6
Murphy, Grant & Co.
Bundles, 28
Rods, b'ls., 245
Prosper Thos. & Son,
Bars, 205
Sanderson & Son,
Scrap, tons, 62
Saxton & Seabury
Cases, 2
Woodford W. O.
Bundles, 24
Bars, 32
Cases, 8
Order,
Blossoms, 3509
Spring steel, tons,
Metals.
Byrne Jos & Co.
Tin plates, b'xs., 4220
Coddington T. B.
Tin plates, b'xs., 95
Dale J. H.
Tin plates, b'xs., 300
Dickerson, Van Dusen &
 Co.
 Antimony, casks, 17
Gomez & Pearsall,
Old vel met, a lot
Hagen & Billings,
Lead brass, b'xs., 2773
Hubbard, Spencer & Co.
Tin plates, b'xs., 716
Leavcraft & Co.
Tin brass, b'ls., 3
Old copper, b'ls., 12
Old metal, b'ls., 2
Old lead, b'ls., 1/2
Sold brs, 1
Marvel W. D.
Tin plates, b'xs., 1715
Meyer & Co.
Lead brass, 927
Netherland Trading
 Society,
 Tin, slabs, 441
 Thins, Dodge & Wn.
Tin plates, b'xs., 460
Antimony, casks, 20
Black tag, b'xs., 60
Western Trans. Co.
Terne p'ls., b'xs., 100
Order,
Antimony, casks, 82
Black tag, b'xs., 78
Lead brass, b'ls., 2773
Old copper, casks, 3
Scrap cop., pkgs., 38
Tin plates, b'xs.,
Tin, slabs, 372

EXPORTS Of Hardware, Iron, Machinery, Metals, &c., from the Port of New York, for the Week ending June 29, 1880:

Hamburg.	Quan. Val.	Zinc, cks.	Quan. Val.
Ptbn. gals. 17,719	\$4,275	Nails, kegs.	3 181
Saw ma. cs. 1304	23,877	Iron, pkgs.	33 258
Hdw. cs. 59	2,458	Ag. imp. pkgs.	53 938
Mach'y, pkgs.	30 3,095	Brass gds. cs.	4 114
Ag. imp. pkgs.	25 2,022	S. w. appr. pkgs.	12 600
Rollers, cs.	7 250	Belting, bales	9 493
Mf. iron, pkgs.	188 1,710		
Tin, bxs.	2 90		
Glassware, cs.	5 70		
Emery whl. cs.	2 290		
Ptbn. gals. 1,542	1,542		
Telph. whl. cs.	1 100		
Q. silver, flasks	10 371		

Bremen.	Quan. Val.	Cuba.	Quan. Val.
Ag. imp. pkgs.	105 3,821	Hdw. cs.	51 1,476
Hdw. cs.	27 687	Mach'y, pkgs.	76 3,131
Ptbn. gals. 234,800	33,400	Saw ma. cs.	33 1,309
Belting, cs.	1 400	Mach. oil, bbls.	14 197
Mach'y, cs.	2 150	Mach. oil, cs.	80 258
Silverware, cs.	3 750	Iron, pkgs.	8 70
Mf. iron, pkgs.	32 412	Hoops, bbls.	132 2,008

Aarhus.	Quan. Val.	Mexico.	Quan. Val.
Ptbn. gals. 1,436,000	17,900	W. mill. cs.	1 1,175
		Ptbn. gals.	17,000 2,150
		Cutlery, cs.	50 700

Rotterdam.	Quan. Val.	Venezuela.	Quan. Val.
Hdw. cs.	10 347	Glassware, pkgs.	10 155
Tinware, cs.	1 55	Hdw. pkgs.	36 702
Plated w. cs.	2 82	Mf. iron, pkgs.	45 452
Ag. imp. pkgs.	18 940	Saw ma. cs.	42 1,349
Saw ma. cs.	201 2,402	Rifles, cs.	31 350
Mach'y, pkgs.	7 232	Iron, pkgs.	8 364

Antwerp.	Quan. Val.	Brasili.	Quan. Val.
Ptbn. gals. 788,801	69,500	Ptbn. gals.	15,026 1,640
Lub. oil, gals. 12,241	1,900	Cutlery, pkgs.	242 5,013
Ag. imp. pkgs.	1 40	Hdw. pkgs.	68 601
Pumps, pkgs.	6 450	Rifles, cs.	22 449

Bristol.	Quan. Val.	Canada.	Quan. Val.
Hdw. cs.	8 95	Sheet iron, pkgs.	5 95

British North American Colonies.	Quan. Val.	Ciapiatine Republic.	Quan. Val.
Hdw. cs.	2 86	Ag. imp. pkgs.	40 1,000
Iron ore, tons.	232 1,707	Hdw. pkgs.	22 449
Buoy, cs.	1 9,000	Iron, pkgs.	19 345
Saw ma. cs.	7 138	Powder, cs.	100 5,000
Pig iron, tons.	10 209	Ptbn. gals.	60,000 7,000
Mf. iron, pkgs.	19 60	Ptbn. gals.	10 898
Ptbn. gals. 7,481	978		
Coal, tons.	480 1,090		

British West Indies.	Quan. Val.	China.	Quan. Val.
Hdw. cs.	2 432	Rifles, cases.	2 204
Saw ma. cs.	3 75	Cartidges, cs.	2 1,608
Mf. iron, pkgs.	14 130	Guns, cs.	12 2,172
Nails, kegs.	42 142		
Ptbn. gals. 15,984	2,044		
Cars.	60 57		
Glassware, cs.	16 93		
Mach'y, cs.	2 205		

British Guiana.	Quan. Val.	Guatemala.	Quan. Val.
Ptbn. gals.	500 113	Ptbn. gals.	215,100 20,800

British Honduras.	Quan. Val.	Glasgow.	Quan. Val.
Hoops, bbls.	25 35	Ag. imp. pkgs.	3 150
Hdw. pkgs.	20 48	Hdw. cs.	2 43
Cutlery, cs.	4 30	Mf. iron, pkgs.	2 208
Mf. iron, pkgs.	4 30	Glassware, cs.	11 400
Nails, kegs.	21 315	Belting, cs.	1 490
Ptbn. gals. 1498	85		
Lead, lbs.	944 85		
Glassware, cs.	8 85		

British Possessions in Africa.	Quan. Val.	Falmouth.	Quan. Val.
Hdw. cs.	293 2,070	Ptbn. gals.	340,272 23,378
Mf. iron, pkgs.	80 1,004		
Nails, kegs.	80 200		
Ag. imp. pkgs.	421 9,400		

New Zealand.	Quan. Val.	Havre.	Quan. Val.
Hdw. cs.	9 377	Ptbn. gals.	26,966 18,418
		Mf. iron, pkgs.	12 105
		Ag. imp. pkgs.	12 5,613
		Mach'y, cs.	15 100
		Lub. oil, bbls.	50 715
		W. mill. pkgs.	2 302
		Saw ma. cs.	49 2,206

Hayti.	Quan. Val.	Stockholm.	Quan. Val.
Nails, kegs.	10 95	Ptbn. gals.	13,968 3,766
Ptbn. gals.	5400 620		
Hdw. cs.	5 95		

Danish West Indies.	Quan. Val.	Barcelona.	Quan. Val.
Hdw. cs.	6 371	Ptbn. gals.	212,107 17,633
Cutlery, cs.	1 40		
Saw ma. cs.	120 1,100		
Tinware, cs.	0 120		
Ptbn. gals.	398 47		
Plaidware, cs.	3 107		

United States of Colombia.	Quan. Val.	Liverpool.	Quan. Val.
Wire, spools.	290 2,647	Mach'y, pkgs.	60 5,779
Hdw. pkgs.	280 6,004	Hdw. cs.	4 7,727
Powder, lbs.	3708 8,600	Lub. oil, bbls.	250 2,008
Firearms, cs.	15 5,444	Ptbn. gals.	1 100
Tinware, cs.	16 437	W. mill. pkgs.	5 290
Shot, pkgs.	112 925	Saw ma. cs.	4 67
Mach. oil, gals.	327 828	Ag. imp. pkgs.	100 5,977
Telph. whl. cs.	3 175	Brass gds. cs.	99 6,000
Lub. oil, bbls.	5 140	Belting, pkgs.	2 1,300
R. R. cars.	25 11,000	Mf. iron, pkgs.	2 180
Cyl. oil, bbls.	2 130	Lub. comp. cs.	3 100
Belting, bales.	1 131	Glassware, pkgs.	15 500
Chain, pcs.	4 75	Metal gds. cs.	3 270
Silverware, cs.	5 613		
Wire cloth, cs.	1 120		
Mf. iron, pkgs.	125 2,719		
Glassware, cs.	106 1,816		
Cutlery, cs.	66 3,459		
Saw ma. cs.	190 2,608		
Ptbn. gals.	3742 607		
Cartidges, cs.	925 24,400		
Ptbn. ware, cs.	13 738		
Pumps, pkgs.	6 175		
Mach'y, pkgs.	147 7,434		
Tacks, bxs.	2 32		

PHILADELPHIA.

Office of The Iron Age, 220 South Fourth St.,
Philadelphia, June 30, 1880.

The first half of 1880 has been a period of extraordinary fluctuations in the iron trade. The opening price during the first week in January was \$36 @ \$38 for No. 1 Foundry iron. For five consecutive weeks a steady advance was maintained, and on the 12th of February the highest quotations were reached, sales having been made at \$43; and in exceptional instances, still higher figures were paid for the best brands. From that date to the 4th of March prices were slightly easier, and quotations were reduced from \$2 to \$3 per ton. On the 11th of March the pressure to sell became increasingly urgent, and from that time to date the decline has been continuous, averaging \$16 @ \$18 per ton from March 11th to June 30th. The causes which led to the decline have been fully detailed in these columns from time to time, as, for instance, under date of March 9th, when Foundry iron was \$40 per ton, we find the following remarks: "Contracts made at low prices are running out, and sellers are now confronted with large quantities of foreign iron on the spot and to arrive. As a matter of fact, we have reason to believe that not more than 10% of the iron consumed during the first three months of the year will cost over \$30 per ton, notwithstanding quotations have been held at much higher rates nominally, thereby making a value which is likely to prove fictitious. A large proportion of contracts were made subject to prices current at time of delivery, and from present appearances it is doubtful whether during the next three months prices will be much, if any, higher than those ruling at date of contract. The fatal error seems to have been in trying to carry

up prices here, without reference to the markets abroad. Whatever may be the ultimate outcome, it is evident that Pig Iron men have put the market in such a condition as to offer the greatest possible inducements for increased production and heavy shipments from England. At the present rate of consumption, there is every reason to think that all the Pig Iron produced on this side could have been easily handled; but, with increasing receipts from abroad, the future of the market seems very uncertain. The effect is more wide-reaching than it may seem at first sight. Consumers, noting the advance of raw material, advanced prices of finished iron, which immediately led to importations of finished iron also, thus bringing in another element of competition. Labor followed suit, and advances have been made from time to time, which, with the present outlook, will be very onerous, if continued. The fact of the matter is, prices have been pushed up too rapidly, and unless markets abroad improve, values cannot be maintained on this side. It is unfortunate that the tenor of advances from Europe indicate that the maintenance of values there depends considerably upon American orders, as it is evident our markets are not at present in a condition to give them much aid." Subsequent events have proved the correctness of the above remarks; and although at this time it is difficult to indicate the course of the market in the immediate future, a review of its present status may not be out of place. There are many healthy features worth considering, and some, if not discouraging, are at least of an uncertain character. The grand predominating feature, however, is in the heavy consumption and the reasonable certainty of its continuance. The steady increase in the earnings of the transportation companies is probably the most direct and conclusive evidence of the satisfactory condition of general business. The increase during the first four months of 1880, as compared with the previous year, is placed at 47 per cent. Large as this is, we understand that water freights are equally satisfactory, and all the lines are taxed to their utmost to meet the demands upon them. As a rule, we do not find any falling off in business at the large manufacturing establishments, and, although nearly all have been running to their utmost capacity and many have greatly increased their facilities, they are still busy and have inquiries from all quarters, which seems to promise even greater activity during the fall months. In this connection there is one feature worth considering, and which can probably be explained. The impression in some quarters seems to be that business cannot be very good, when furnaces and mills have been stopped in every direction for want of orders. It should be borne in mind, however, that the increased production began to come on the market about the time when the heaviest buyers had supplied themselves with stock, and was then really no necessity for increased supplies. The trade finding the advance checked, at once stopped buying, and as most parties had contracts running, they were enabled to keep their establishments at work without much necessity for additional purchases. The arrivals of foreign iron at this time were very heavy, which, added to the product from furnaces recently started, completely broke the market. When the fact is taken into consideration that upward of a million tons of foreign iron were brought here within a very few months' time, the decline in prices cannot be regarded as at all extraordinary. The experience gained during the periods under review seems to be, first, that the capacity for production in the United States is quite equal to its consumptive capacity, and second, that beyond a certain figure, say \$25 for Pig Iron, there will always be danger from foreign competition, and the higher the price the greater the danger. The facilities for doing business are such that purchases can be made in all quarters of the globe at a few hours' notice, and whenever there is a margin for operations of this character, imports may be expected to commence immediately. As to the actual condition of business at this date, it cannot be regarded as altogether satisfactory, but there are many indications of improvement. Consumers are nearly all bare of stock, and their requirements are likely to be large. Importations of iron are virtually at an end, although the shipments from England were 150,000 tons during last month. Several furnaces will be blown out during the coming month, and a list of 26 is given below which have gone out within recent date. The position during the next half year, as compared with that just closed, is therefore likely to be as follows: Consumption not less, probably larger, production much smaller, and importations at least half a million tons less. Under these conditions a healthy business may be looked for, and there are no apparent reasons why it should be otherwise. The heavy stocks of foreign iron will prevent prices advancing too rapidly, but in course of a few months these will probably have gone into consumption, and the demand have to be supplied as before, from American furnaces. During the past ten days indications have been of a favorable character, and such as generally precede a stronger market. Many small orders have been placed and quotations asked for larger lots. The best brands are scarce, and generally held at a slight advance in price. In several cases \$10 @ \$11 per ton more money has been paid to secure the brand desired. It is true that this may not be maintained or followed by an advance in other descriptions, but it will be found, on a careful examination of the subject, that the best brands are invariably the first to strengthen on an upward movement, and the last to weaken on a decline. These facts, therefore, in connection with the improved tone of Western, as well as foreign markets, appear to warrant the conclusion that bottom has been reached, and that a healthy reaction will be seen at an early date. The market is still unsettled and prices irregular, with the exception of best brands of Foundry, which are firmer. Quotations range from \$22 @ \$25 for No. 1 Foundry; \$20.50 @ \$21.50 for No. 2 Foundry; and \$19 @ \$23 for Gray Forge. The average price for No. 1 Foundry for the past six months in 1879 and 1880 has been as follows:

1880.	1879.
January.....	\$30.37 1/2
February.....	41.25
March.....	39.75
April.....	33.40
May.....	26.25
June.....	24.00

FURNACES RECENTLY BLOWN OUT.	
Warwick.....	1
Hooven.....	1
Eckert.....	1
Reading.....	1
Ringgold.....	1
East Penn.....	1
Corwall.....	1
Fulton.....	1
Atkins.....	1
Hittner.....	1
Brooks.....	1
Allegheny.....	1
Anderson.....	1
Cameroon.....	1
Middletown.....	1
Marionetta.....	1
Keystone.....	1
Lehigh Valley.....	1
Montgomery.....	1

Manufactured Iron.—The history of the Pig Iron trade during the past six months in all essential points may be said to include the history of the trade in finished iron also. Prices advanced rapidly, although not quite in proportion to Pig Iron. The highest prices were reached during the first three weeks in February, when Bars were firm at 3.8¢ and Tank Iron 4.3¢. Prices then began to weaken, but were fairly maintained until the end of March, at which time Bars were down to 3.5¢. A week later Plate Iron began to weaken, and was quoted at 4¢ on April 7th. Since then, the advance of all descriptions has been steadily downward, until 2.2¢ for Bars and 2.5¢ for Plates became common quotations, and are still current, without much appearance of early improvement. The sudden reaction, it is scarcely necessary to say, was the result of high prices. Labor and material advanced at such a rate that manufacturers were compelled to advance their quotations also. This met with very little opposition so long as "the boom" continued. Everybody was in the humor to buy so long as prices were advancing, but soon as sellers became anxious to realize, buyers became timid and the demand fell off amazingly. It is not unlikely, however, that stocks have been so far reduced that a vigorous demand will set in again at a very early date. Consumption is known to be large, and a large portion of the 100,000 tons of imported Iron Bars, Plates, Angles, &c., is believed to have gone into use. The general feeling is, therefore, favorable to better prices toward fall, and, in fact, they must be better before the mills can start up with any margin for profit. The past week has developed a stronger demand, and the indications favor an active trade at steadily improving prices. Sales of 100-ton lots have been made at 2.1¢ for best refined iron, but the tone of the market is better, and 2.25¢ would probably be an inside figure to-day, and about 2.6¢ @ 2.7¢ for Tank Iron.

Steel Rails.—The demand for Rails during the past six months has been very large, with strong indications that it will be maintained during the balance of the year. Steel Rails opened at \$72.50, and gradually advanced to about \$85 in February, but it is not likely that very much business was done at anything over \$80. Prices commenced to weaken toward the end of March, and for two months gradually declined until \$65 was reached. Since then prices have been steady, and \$60 @ \$62.50 seem to be bottom figures, according to time of delivery. The mills have had quite as many orders as they could fill, and the outlook is in all respects satisfactory. The importations of Iron and Steel Rails from October to May amount to something over 100,000 tons, to which may be added about 40,000 tons Steel Blooms.

Iron Rails.—Business has not been as well maintained as in some other departments. Prices were held very firmly during the first three months of the year. Opening at \$60, they steadily advanced to \$70, which was reached the first week in February. Early in April the market began to weaken, which appears to have been the signal for buyers to withdraw their bids. Since that date sales have been made only by heavy concessions, and buyers are still timid at \$45, the ruling quotation for heavy sections. There are no specially encouraging features in the immediate outlook, but it is believed that the demand will be large during the fall months. Prices are not likely to go much, if any, lower, although, as usual in a dull market, there are some very anxious sellers. The only sale reported during the week is one of 700 tons 35¢, at \$50; delivery, western portion of Pennsylvania.

Old Rails.—Prices have fluctuated violently, the difference between the highest and lowest prices within the half year under review amounting to upward of \$21 per ton. The year opened with sales at \$37 per ton, but before the close of January \$44 was realized for a few lots, and at \$43 some heavy transactions were reported. From January 15 to March 4 prices were held very steady, and it is likely that no business was done in that time below \$42.50 and from that to \$44. During March prices began to weaken, and before the close of the month Rails were offered at \$38. The decline continued all through April, and from \$38 they steadily declined, and at the close were offered at \$34. May seems to have been a still worse month for holders. The decline continued without a single reaction, until at the close they were offered at \$25. Prices were a little steadier during June, but latest sales were at the lowest figures. Holders ask \$24, but in several instances, in which lots had to be realized upon, \$22.50 @ \$23 was all that could be obtained, and sales were reported to-day at both figures. It is difficult to say what quantity of Old Rails have been imported since October, but under the heading of "Old Iron" 266,000 tons have been brought in. The average price during the first six months of the year, and the corresponding period in 1879, is as follows:

1880.	1879.
January.....	\$21.25
February.....	20.75
March.....	21.00
April.....	22.12 1/2
May.....	22.30
June.....	23.12
January.....	\$22.25
February.....	23.75
March.....	40.12 1/2
April.....	35.50
May.....	26.50
June.....	24.75

PITTSBURGH.

Office of The Iron Age, 77 Fourth Avenue,
Pittsburgh, Pa., June 30, 1880.

Pig Iron.—While the general position of the market remains much the same as noted in our last report, there is a more hopeful feeling in regard to the immediate future; not only is an increased demand

confidently looked for before long, but sellers generally expect to realize better prices, and, as a consequence, there is a disposition manifested by some who have idle money to buy on speculation. Indeed, the impression has been gaining ground for some weeks past that Pig Iron is a safe investment at current rates, and, while no one looks for another boom, it is thought by many that there will be an advance of from \$3 to \$5 per ton within the next 60 days. It is computed that the stock in hands of American producers is, in round numbers, 150,000 tons; that of imported iron, at all points, 260,000 tons. The supply in hands of consumers is known to be small. The speculative lots have been pretty well picked up, and it is confidently expected that the consumption will be considerably larger from July to January than it was from January to July. Moreover, there is no doubt but that the importations will be comparatively light during the last half of the year, and until there is an improvement in price the production of American will continue small, as it is not to be supposed that many, if any, of the idle furnaces will be started up as long as the prices ruling afford no margin for profit. One important lesson learned by our ironmasters from the recent boom is that the price of American iron must be kept down sufficiently low to prevent foreign iron from coming in, and this being the case, there is not likely to be any very material advance, although, as already intimated, higher prices are looked for. Forge Irons are supposed to be worth somewhere from \$20 @ \$27, and Foundry grades about the same. Sale of 100 tons extra Mill at \$26, 4 mos., and several small sales of Foundry within the range of our quotations.

Manufactured Iron.—The firmness noted in our report of last week still continues, and business is more active than it was a month ago, indeed orders are coming forward more freely than usual at this season. There has been an increasing demand for Tank Iron for some weeks past. A great many Oil Tanks have been destroyed by the recent fires in the oil regions which will have to be replaced; and there is also an increased inquiry for Bridge, Sheet and other grades of finished iron. Manufacturers of agricultural implements are reported as having very light stocks, and they will no doubt be free buyers within the next few weeks. We continue to quote assorted orders on a basis of \$2.20 @ \$2.25 for Merchant Bars.

Nails.—At a special meeting of the Western Nail Association, which convened here the latter part of last week, it was agreed to reaffirm the present card—\$3.25, 60 days, 10¢ off for car-load lots and 2¢ discount for cash. Prior to the meeting in question, manufacturers had not been adhering closely to the card, some of them accepting orders on a basis of \$3 and even less, but \$3.15, 60 days, 2¢ off for cash, is the bottom, and they expect to have plenty of orders at this as soon as the fall trade opens up. Stocks at nearly all the leading points of distribution in the West are known to be small. At Chicago jobbers are said to have to borrow from one another to get up an order, and there is no reason to doubt, we think, but what there will be an active fall trade. It is very evident from their action all this year, that manufacturers are determined to control prices, and this is the main object sought after in keeping down production, and thereby preventing an accumulation of stock.

Railway Supplies.—There is considerable inquiry, and an active business this fall is confidently expected. In addition to the many new roads under construction, the old roads will have to buy more or less to make repairs, and there is reason to believe that the trade will be much more active the last half than it has been the first half of the year. Spikes are still quoted at 2 1/4¢, 30 days; Fish Plates, 2 1/4¢; Track Bolts, 3 1/2¢ @ 4 1/4¢. No recent sales of Steel Rails reported here. The mills cannot sell for delivery this side of September or October, having orders sufficient to absorb their production until that time.

Wrought Iron Pipe.—There is a very fair business for the season, and a largely increased demand is looked for next month. No change in prices. Discounts on Gas and Steam Pipe, 60 @ 65¢; on Boiler Tubes, 45 @ 50¢; Oil Well Casing and Tubing, 20.

Muck Bar.—We hear of offers to sell from other points at equal to \$40 delivered in Pittsburgh. We do not believe that any of the mills here would sell at the price in question, unless it was a case of necessity.

Steel.—While orders have not been coming forward so freely of late, nor is it to be expected with the 1st of July just at hand, the mills generally appear to have about all they can do.

Scrap.—The market for all kinds of Scrap continues very dull, and, in the absence of sales, dealers decline to give quotations. Old Car Wheels appear to be holding up better than anything else in this line.

Window Glass.—The hull noted for some weeks past continues, and it is not likely that there will be any material improvement until August; however, a good fall trade is looked for, and the matter of production and stock is being closely guarded by the association. Manufacturers are determined to keep the market well in hand, and prevent it from being overstocked. No change in prices.

Coke.—There is a fair business for the season, and while but few new purchases have been made recently, manufacturers generally have more or less old contracts. We continue to quote Connellsville at \$1.50 per ton, delivered free on cars at ovens, although rumors prevail of sales being made as low as \$1.25.

Coal.—The Coal trade of Pittsburgh is in pretty good shape, all the Coal ready to move having been gotten to market on the recent freshet, and the indications now are that the Coal fleet will all get back home with their tons of empty barges. An effort is being made to reduce the price of mining in the Monongahela Valley from 3 1/4¢ to 3¢ per bushel.

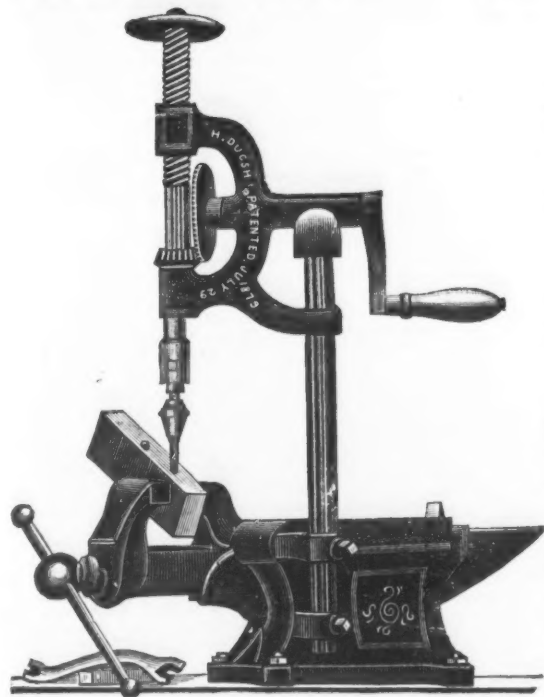
Petroleum.—The Crude article continues very unsettled, being manipulated by speculators. The law of supply and demand has

had but little to do with the market recently. Large operations—on paper—are being made daily at the oil exchanges, and "selling short" or "going long" are still the order of the day. That there will be a heavy legitimate business during the last half of this year is confidently expected; but with the very large production, and a visible supply estimated in round numbers at 10,000,000 barrels, it is difficult to see why there should be much of an advance in price.

CHATTANOOGA.

Office of The Iron Age, Market and 8th Sts.,
Chattanooga, June 26, 1880.

The weather has been warm during the week, with good and seasonable rains. Political agitation more or less affects the volume of general trade. The iron business is altogether in a healthier state than for some weeks, though business has not been

ANVIL, VISE AND DRILL.

This machine was first made by a practical mechanic for his own use, and to meet a want which nothing in the market would fill. It was so highly regarded by all who saw it that he was induced to get it patented and manufactured for the market. When it was brought to our attention we saw at once its great utility, and bought the exclusive right for the whole United States. We believe it will come into general use as fast as its merits become known. The anvil face is 18 inches, and height 6 inches. Width of vise jaw, 3 1/2 inches; steel drill press, with adjustable chuck to hold 1/2-inch drills, and all smaller sizes. The article to be drilled can be held firmly in the vise, so as to be drilled at any angle, or if it is too large for the vise it can be drilled on the anvil. The drill may be removed when not in use. Price for the whole, \$18. Weight, 80 pounds. The vise and anvil are complete without the drill, and are sold for \$10; weight, 60 pounds. For all jobbing shops, it is worth much more than it costs. Farmers can do with it many jobs which otherwise would have to be sent to the shops. All Hardware dealers who do not keep them in stock will furnish them on demand, or we will send them on receipt of the price.

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EXCELSIOR MILLS, Genuine Turkish Emery, BROWN & BRO.'S Brass and Copper Wire, Rivets, Spoons, &c.
GAYLORD MANUFACTURING CO.'S Tilt, Chest and Cupboard Locks.

AMES' Genuine A Chester Emery.
COLWELL & COLLINS, NORWAY BOLT CO., Norway Carriage and Tire Bolts.
PLYMOUTH MILL CO.'S Black and Tinned Iron Rivets.
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Also a large line of Heavy and Shelf Hardware.

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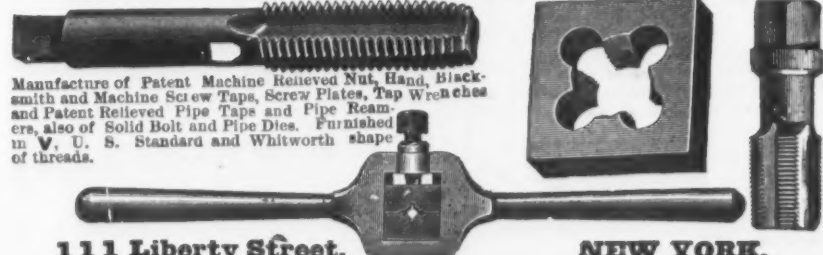
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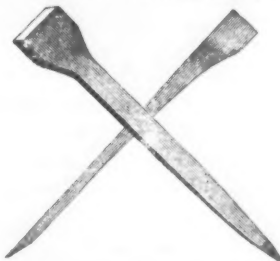
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NEW pattern Heavy Screw Clamps; strongest in the market.
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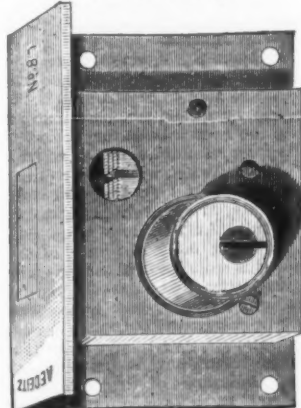
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Wide Bar Full Length.

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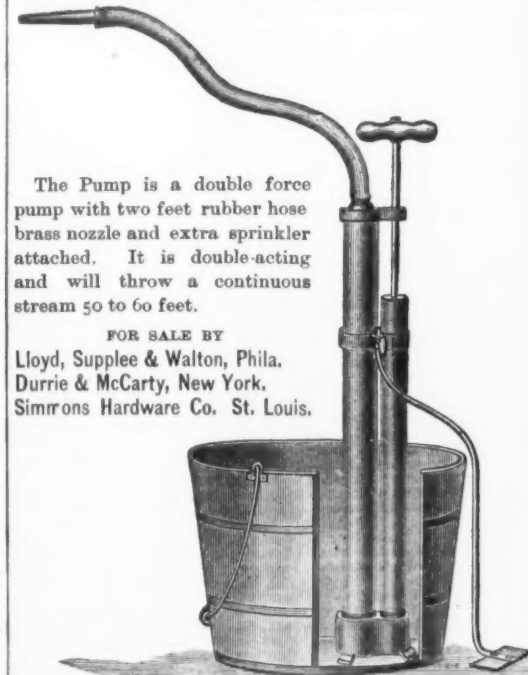
The back thrust when in use borne by the SHANK instead of the Handle
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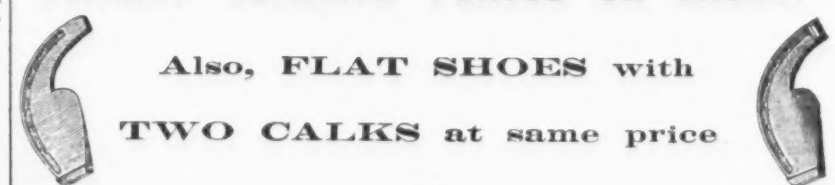


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Send for Catalogue and Price List.

A Memorial for Prof. Woehler.—A movement is on foot in Europe and in this country to obtain funds for the purpose of presenting a gold medal to Prof. Woehler, the great German chemist, on his eightieth birthday, July 31, 1880. Profs. Chandler and Jay, of Columbia College, are receiving contributions from those who desire to join in this testimonial in this country.

An arrangement has just been entered into between the Society of Engineers of Western Pennsylvania and the Pittsburgh Library which promises to be mutually beneficial, and is worthy of the consideration of other societies of like character. The arrangement makes the library the headquarters of the Engineers' Society, and includes the payment by the latter of a sum of money by which all its members will be entitled to all the privileges of membership in the library. This amount will be devoted under the joint directions of the library and the Engineers' Society to the purchase of scientific and technical works. It is proposed to establish an alcove in the library, in which a full collection of scientific and technical literature will be found. This Society of Engineers is a comparatively young organization, but it already numbers a membership of about 125, which is rapidly increasing among the civil and mechanical engineers of the Pittsburgh section.

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S. CHENEY & SON,
Manlius, N. Y.,
Small Gray Iron Castings.
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THE PATENT Screw Window Balance,

An adjustable mechanical substitute for sash weights in their work of raising sash. Capable of being made of any power, but now made for medium and light sash only.

As easily applied as the sash pulley.

A MODERN INVENTION, made to meet a positive want for old windows—though as well adapted to new. Saving largely in money over weights, while their complications are all avoided. Guaranteed to possess the merit claimed, proved by actual service of over ten years.

STANDS ALONE in its line. Simple, powerful, adjustable, correct in principle. Fully doing the work, needing but the acquaintance of the public with its genuine merits to insure for it prompt and general use where such an article is required.

When applied they are out of sight (working in the edges of the sash); are not handled in working; the sashes are locked at one operation with the meeting rail lock.

They are put up in card boxes, containing one dozen each. Price \$1 per window (four). Liberal discounts to the trade. Address orders, &c., to

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THREE DIFFERENT SIZES OF SPOUTS.
SEAMLESS BRASS COLLAR, BRASS HINGE, Solid Lid.
NO SOLDERING. THE HINGE CANNOT MELT OFF.

"DRAW CUT" BUTCHERS' MACHINES.
Choppers, Hand and Power Stuffers, Lard Presses.
Warranted thoroughly made and the BEST in Use.
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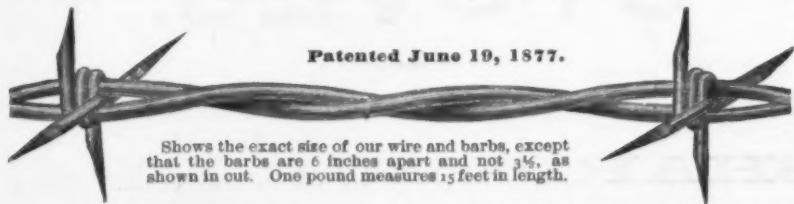
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FOUR-POINTED BARB STEEL WIRE FENCING,

GALVANIZED AND PAINTED.

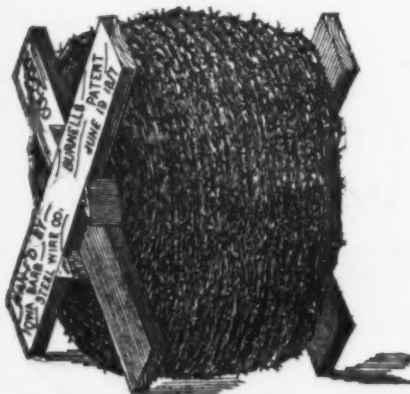
ALSO,

Staples, Diggers, Stretchers, &c.



Patented June 19, 1877.

Shows the exact size of our wire and barbs, except that the barbs are 6 inches apart and not 3 1/2, as shown in cut. One pound measures 15 feet in length.



Shows our wire put up on spools, ready for shipment. Dimensions of spool, about 18 x 20 x 22, measuring about 1/4 cubic feet; weight, about 100 pounds, and length of wire, about 1500 feet.

Made of two strands of No. 12 Steel Wire, twisted together just enough to allow for the contraction and expansion of the metal, caused by the difference in temperature, and still not so much as to injure the structure of the steel.

The Barbs on our wire are FOUR POINTED, thus always presenting a Barb laterally or at a right angle, which is a GREAT ADVANTAGE over the two-barb wires, as cattle are unable to get against the fence to break it or push it down.

The Barbs are fastened to the wire (at intervals of six inches) in a manner entirely different from any other, being securely locked AROUND and BETWEEN both wires, so that they cannot slip or move toward each other, and they also prevent the untwisting of the cable should either wire get broken.

The use of Barbed Wire for fencing is no longer an experiment, but is an acknowledged necessity, as over ONE HUNDRED THOUSAND MILES of it were put up last year, and we confidently expect twice the quantity will be used this year, as there is no other material anywhere near as cheap, as lasting or effective.

**MAXIMUM
IN
STRENGTH.**

Samples, Circulars,
&c., sent to any
part of the world.
Correspondence in-
vited.

**MINIMUM
IN
WEIGHT.**

\$\$\$ SAVED \$\$\$

1977 NINETEEN HUNDRED SEVENTY-SEVEN 1977

MACHINES
BOTH NEW AND SECOND-HAND

COMPRISING
MACHINE AND BLACKSMITH
TOOLS OF EVERY DESCRIPTION.
WOOD-WORKING MACHINERY IN ALL ITS
BRANCHES. PORTABLE ENGINES, UPRIGHT and HOR-
IZONTAL STATIONARY ENGINES, 1 TO
300 HORSE POWER. **S.C.F. & CO.** LOCOMOTIVE FIRE-
BOX, HORIZONTAL, and UPRIGHT BOIL-
ERS, 1 TO 100 HORSE POWER. WATER WHEELS, COT-
TON AND WOOLLEN MACHINERY, STEAM
PUMPS, CRISTMILL MACHINERY,
Etc., FULLY DESCRIBED, AND
PRICES ANNEXED.

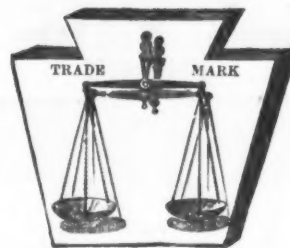
Send stamp for same. In our List No. 23. [stating what you want.]
We have the Largest Assortment of Machinery to be
found in the hands of any firm in the country.

Works and Main Office, **S. C. FORSAITH & CO.**
Manchester, N. H.

Branch Office and Wareroom, 209 Center street, New York City.

HENRY DISSTON & SONS,

KEYSTONE SAW, TOOL,



STEEL & FILE WORKS,

Front & Laurel Sts.,

PHILADELPHIA.

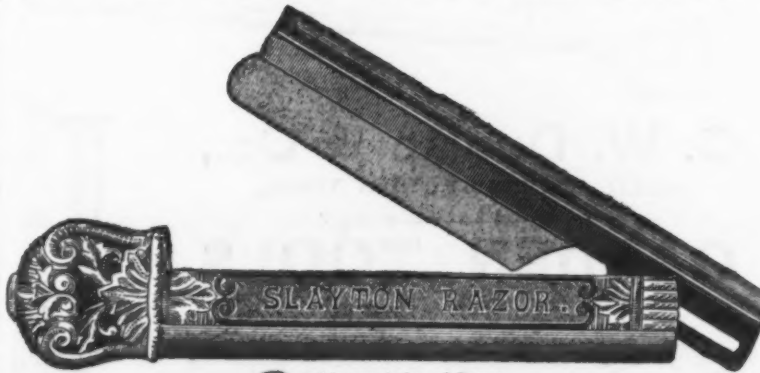


Great American One-Man Cross-Cut Saw,
With Supplementary Handle.

PATENTED JUNE 27, 1876, OCTOBER 4, 1870.

The above cut represents our new and improved method of changing the extra handle to either end, thus making a One-Man Saw so it can be operated by two men if desired. The extra handle can be placed at any distance from the regular handle, as shown in the cut, thus suiting the option of the operator. The "Great American" One-Man Cross-Cut Saws are made and ground on the same principle as our No. 7 Hand Saws. We have lately improved the file for keeping this tooth in order, and it should be ordered with saws.

THE SLAYTON RAZOR.



This cut is exact size of Razor.

PERFECTION

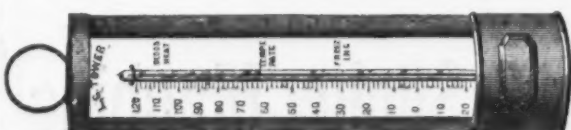
FOR PORTABILITY.
FOR CUTTING QUALITY.
FOR TEMPER.

Handles of German Silver, Nickel Plated. Blades of the Finest Steel in the World. Every Razor Fully Warranted.

L. C. TOWER, Thermometer Manufacturer,

Canvassers Wanted.

39 Exchange St., Rochester, N. Y., Sole Agent.



L. C. TOWER
Manufacturer of
Thermometers

Of Every Description,
Rochester, N. Y.

J. STEVENS & CO.,
Chicopee Falls, Mass.
P. O. Box 224.

MANUFACTURERS OF
SPRING CALIPERS AND DIVIDERS.

Also, Surface Gauges and Counter Sinks, Stevens' Patent Breech-Loading Sporting Rifles, double and single barrel; Shot Guns, Pocket Rifles, Pocket Pistols, and the noted Hunters' Pet Rifles. Our Shooting Gallery Rifle is the favorite everywhere.



TO STEAM USERS

Save Fuel and Money.

Obtain regular speed and prevent explosion by using

PEERLESS

DAMPER REGULATOR,

the greatest fuel-saving appliance ever invented. Adjustable to any pressure. In ordering mention pressure. Illustrated Catalogue sent on application. We set it up and guarantee performance. Price, \$75.

AMERICAN STEAM APPLIANCE CO.

SOLE MANUFACTURERS,

13 and 15 Park Row, NEW YORK.



A. WYCKOFF,

Manufacturer of

Wyckoff Patent Wood Water Pipe,

Steam Pipe Casing.

Chain Pump Tube, Carbs, Reels, Rubber Valves, Chains, &c.

Established 1844. Send for pamphlet.

ELMIRA, N. Y.

WANTED—IN CANADA.

Responsible parties to man-
ufacture

**Buckeye Suction and
Force Pump**

on royalty. Thousands made and sold yearly in United States. Parties with extensive reputation only need apply. Address,

J. B. & S., Lock Box 168,
Springfield, Ohio.



ECLIPSE.

**ELEVATOR
BOLTS.**

Every Bolt made from the best of Norway Iron. Cups placed on quickly. Rusty Bolts can be removed without injury. Broad, flat head, which gives smooth belt surface.

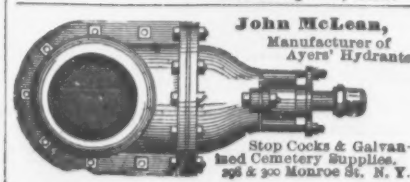
Pat. Aug. 5, 1879.

For sale by the trade.

Indianapolis Machine & Bolt Works

SOLE MAKERS,

Indianapolis, Ind.



John McLean,
Manufacturer of
Ayers' Hydrants

Stop Cocks & Galvan-
ized Cemetery Supplies,
226 & 300 Monroe St. N. Y.

KIMBALL'S PATENT "Solid Cast Steel" SHOVELS & SPADES.

The blades are forged from Solid Cast Steel, and riveted to Wrought Iron Strops. The back is concave, which makes them much stronger than other shovels. They are used extensively in South America as Sugar Shovels.

ALSO,

"BOSS" PATENT MOLASSES GATES,

With Ratchet Thumb-Screw to regulate the pressure to any degree of tightness.

NORRIS FRAME PULLEYS.

KIMBALL SHOVEL CO.,

SOLE MANUFACTURERS,

OFFICE, 67 GERMAN STREET,

BALTIMORE, MD.

COVERT'S
Patent Improvement in
ROPE GOODS.

No more Splicing or Winding
Ends with Cord.



No. 1. Rope Halters, Horse Ties, Cattle Ties, Halter Leads, &c., made by clamping the lap with steel rings, as shown in cut. Also, clamping the end with a ring to prevent unbraiding. This is all accomplished by machinery, and a superior article can be made at so much less cost, it will not pay any one to make up goods the old way. We are now prepared to furnish the trade the cheapest and best Rope Halters ever made. No. 2 illustrates the twisted and irregular form of the spliced Halter; also the insecure method of whipping the end with cord, which invariably comes off, and allows the rope to untwist. No. 3 illustrates the New Halter. It is made by clamping the lapa with steel rings. The end is also secured with a steel ring, which will remain as long as the rope lasts. We have also a full line of

COVERT'S HORSE AND MULE JEWELRY.



Consisting of Covert's Celebrated Harness Snaps, Swivel Snaps, Open Eye Bit and Chain Snaps, Snap and Thimble for Horse and Cattle Ties, Rope Goods, coarse Tie, Cattle Ties and Halter Leads, Leather Horse Ties, Breast Chains, Halter Chains, Martingale Chains, Rein Chains, Post Chains, Post Rods, &c. These goods are far superior to anything of the kind on the market. They have from real merit become standard, and never fail to give entire satisfaction. They are sold by all leading jobbers in general and saddlery hardware at manufacturers' prices. Send for illustrated catalogue and price list. Address **COVERT MFG. CO.** Sole Manufacturers, West Troy, N. Y.



Peerless Tea Kettle.

The most durable and handsome kettle in the market, having the breast, sides, and a strengthening portion for the spout all spun from one piece of sheet metal and double-seamed to the pit, so that the seam is brought under the sides of the kettle, forming a strengthening rib of four thicknesses of metal, at the point of greatest wear, upon which it rests when on the stove. By this means the objections to all other copper kettles are overcome. Sole manufacturers,
SUNDY MFG. CO., Buffalo, N. Y.

COXE BROS. & CO., Cross Creek Lehigh Coal.

The Purity and Strength of this Coal especially adapt it for the working of Iron and Metals.

GENERAL OFFICE, 12 & 14 Trinity Building, 111 Broadway, New York.

BRANCH OFFICE, 206 Walnut Place, Philadelphia.

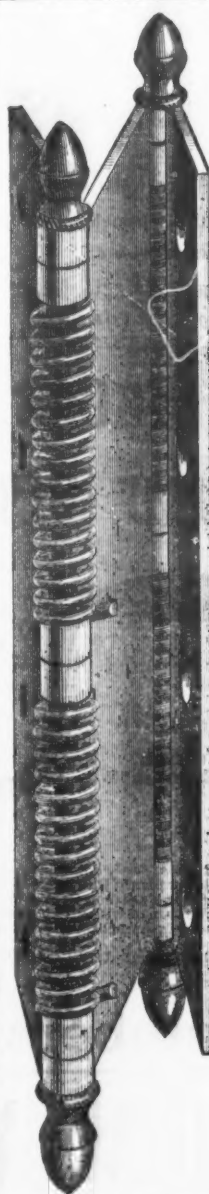
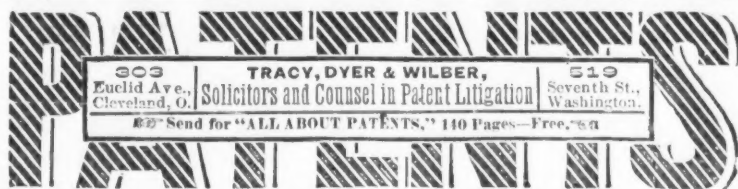
E. B. & S. W. ELY, Agents, P. O. Box 262, N. Y.



Universal Lathe Dog.

It is very strong. Holds very strong. Will not deface finished work. Holds round square or irregular work. Always stands up square with the work and will not "skew." Is more evenly balanced than the common dog.

Send for circular.
SELDEN G. NORTH, No. 347 North Fourth Street, Philadelphia, Pa.



SPRING HINGES WITH Patent Anti-Friction Springs, FOR SCREEN DOORS.

PRICE LIST.—Per Dozen Pairs.
SINGLE JOINT HINGES.

(To Swing one Way.)

SIZE.	WITHOUT ACORN TIPS.		WITH ACORN TIPS.	
	BRASS.	NICKEL PLATED.	BRASS.	NICKEL PLATED.
2 3/8 inch.....	\$ 3 00	\$ 4 50	\$ 5 00	\$ 6 50
3 ".....	4 50	6 50	6 75	8 75
5 ".....	7 50	10 00	10 00	12 50

DOUBLE JOINT HINGES.

(To Swing both Ways.)

To be used on Door 1 inch thick, or less.

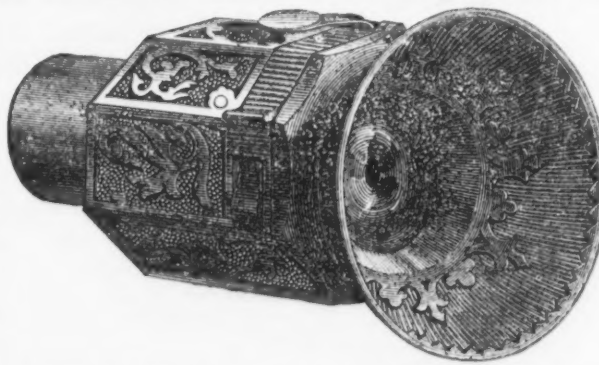
SIZE.	WITHOUT ACORN TIPS.		WITH ACORN TIPS.	
	BRASS.	NICKEL PLATED.	BRASS.	NICKEL PLATED.
2 3/8 inch.....	\$ 6 60	\$ 9 00	\$11 50	\$14 25
3 ".....	8 30	11 50	13 50	17 00
5 ".....	16 50	21 00	21 50	26 00
6 " Double for Office Doors.....				54 00

The large cut represents full size of our 5-inch Double Joint Acorn Tip Hinge for mortising. The small cut represents the plain Single Joint Hinges, but not full size. Sample pair will be sent by mail on receipt of price

Liberal Discount to the Trade.

SCOVILL MFG. CO., Nos. 419 & 421 Broome Street, NEW YORK.

PATENT Elliptic Spring Whistles



We call the attention of the trade to the whistle for speaking tubes, represented in above cut, being superior, in a mechanical point of view, on account of the

PATENT ELLIPTIC SPRING,

which is much less liable to break and get out of order than the spiral spring usually used. These whistles being made entirely of metal, are very strong and durable. They are offered in a variety of styles at very reasonable prices. Send for illustrated circular and quotations. We also invite an examination of our **PATENT REVERSIBLE DOOR LOCKS**, which by their peculiar construction, combine simplicity, strength and durability. In these Locks the combination of the Patent Lever and Spring renders the latch movement very easy and prompt in action. Illustrated catalogues and price lists furnished on application.

TRENTON LOCK AND HARDWARE CO.,

Manufacturers of Superior Building Hardware. Trenton, N. J.

AGENTS. JAMES M. VANCE & Co., 211 Market St., Philadelphia, Pa.; JAMES MARSHALL, 48 Warren St., New York

No. 00. No. 000. No. 10. No. 100. No. 2. No. 20. No. 200. No. 2000.

VERMONT SNATH CO.,
MANUFACTURERS OF THE
No. 00 and 000 Patent Swing Socket Snaths.
SPRINGFIELD, VERMONT.

Represented in New York by LAMSON & GOODNOW MFG. CO.

THE DEXTER CARRIAGE SPRING

Combines It is
Strength, Graceful,
Durability, Noiseless,
Beauty, Light and Easy.

The **DEXTER SPRING** is the most perfect Carriage Spring ever invented. Wherever it is known it is rapidly superseding all others for pleasure vehicles. It is especially recommended for use on the rough roads of new countries, as its peculiar construction relieves the strain on the vehicle and shock to the passenger, while the high grade of material used reduces the probability of breakage to a minimum. For circulars, prices, &c., address

DEXTER SPRING CO., Hulton, near Pittsburgh, Pa., U. S. A.

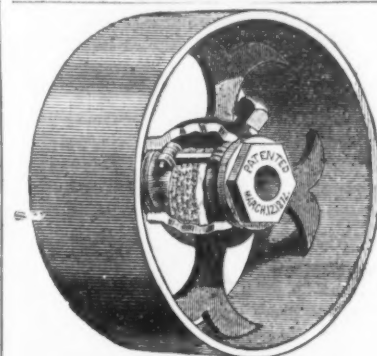


GEORGE N. PIERCE, Buffalo, N. Y.,
Manufacturer of
Bird Cages, Refrigerators

AND
HOUSE FURNISHING GOODS.

Send for Illustrated Catalogue.

OPEN STOVE VENTILATING CO.,
78 Beckman St., New York City
PHILLIPS BUTLER & CO., Agents at Nashville, Tenn.
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W. OESTERLINE,

No. 13 Home St., CINCINNATI, OHIO.

Send for Circulars and Price List.

Thos. C. White & Co.

Manufacturers of

BUILDERS' HARDWARE,

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Sole Agents for

HUME'S CHALLENGE

Gate Hinge

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Patented Nov. 25, 1879.

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All goods guaranteed

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THE
"RIGHT SPEEDY"
CORN SHELLER

Is the best Hand Sheller made; does the best work and works the best; is warranted five years.

Agents Wanted in every County. Sample sent on receipt of \$5.00.

Specially adapted for export. Address Patentee and Sole Manufacturer,
CURTIS GODDARD
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Keystone Screw Co.

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PHILADELPHIA.

J. BILLERBECK

Manufacturer of

Iron Gimlet-Pointed Wood Screws

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A. PARDEE & CO.,

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Lehigh Coals.

The following superior and well-known Lehigh Coals are mined by ourselves and firms connected with us, viz.

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Pardee, Bro. & Co. LATTIMER.

Calvin Pardee & Co. HOLLYWOOD.

Pardee, Sons & Co. MT. PLEASANT.

THE HOBOKEN COAL CO.,

Dealers in

SCRANTON, LEHIGH and other COALS

Retail Yard on D. L. & W. Railroad, cor. Grove and 10th sts., Jersey City. Coal delivered direct from shutes to cars and wagons. Families and manufacturers supplied with the best quality of Coal at the lowest rates.

OFFICES: At yard cor. Grove and 10th sts.; cor. Bay st. and Newark av., Jersey City; Room 35, 111 Broadway, N. Y. General Office, Bank Building, cor. Court and Hudson sts., Hoboken. P. O. Box 247, Hoboken.

A Memorial for Prof. Woehler.—A movement is on foot in Europe and in this country to obtain funds for the purpose of presenting a gold medal to Prof. Woehler, the great German chemist, on his eightieth birthday, July 31, 1880. Profs. Chandler and Jay, of Columbia College, are receiving contributions from those who desire to join in this testimonial in this country.

An arrangement has just been entered into between the Society of Engineers of Western Pennsylvania and the Pittsburgh Library which promises to be mutually beneficial, and is worthy of the consideration of other societies of like character. The arrangement makes the library the headquarters of the Engineers' Society, and includes the payment by the latter of a sum of money by which all its members will be entitled to all the privileges of membership in the library. This amount will be devoted under the joint directions of the library and the Engineers' Society to the purchase of scientific and technical works. It is proposed to establish an alcove in the library, in which a full collection of scientific and technical literature will be found. This Society of Engineers is a comparatively young organization, but it already numbers a membership of about 125, which is rapidly increasing among the civil and mechanical engineers of the Pittsburgh section.

WM. ESTERBROOK,
Wholesale Manufacturer of
Coal Hods,

311 Cherry St., PHILADELPHIA.

S. CHENEY & SON,
Manlius, N. Y.,
Small Gray Iron Castings.

We warrant our work for smoothness and finish.

THE PATENT Screw Window Balance,

An adjustable mechanical substitute for sash weights in their work of raising sash. Capable of being made of any power, but now made for medium and light sash only.

As easily applied as the sash pulley.

A MODERN INVENTION, made to meet a positive want, for old windows—though as well adapted to new. Saving largely in money over weights, while their complications are all avoided. Guaranteed to possess the merit claimed, proved by actual service of over ten years. STANDS ALONE in its line. Simple, powerful, adjustable, correct in principle, fully doing its work, needing but the acquaintance of the public with its genuine merits to insure for it prompt and general use where such an article is required. When applied they are out of sight (working in the edges of the sash); are not handled in working; the sashes are locked at one operation with the meeting rail lock.

They are put up in card boxes, containing one dozen each. Price \$1 per window (four). Liberal discounts to the trade. Address orders, &c., to **ROBT B. HUGUNIN, Sole Maker,** Hartford, Conn.

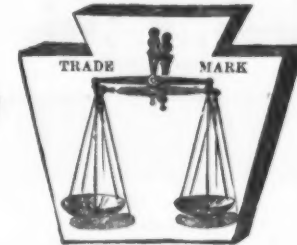
Special territory given active agents. For sale by **BUTLER & HUNTING,** 43 Dey St., N. Y.

THREE DIFFERENT SIZES OF SPOUTS. SEAMLESS BRASS COLLAR, BRASS HINGE, Solid Lid. NO SOLDERING. THE HINGE CANNOT MELT OFF.

"DRAW CUT" BUTCHERS' MACHINES. Choppers, Hand and Power Stuffers, Lard Presses. Warranted thoroughly made and the BEST IN USE. **MURRAY IRON WORKS,** Burlington, Iowa.

HENRY DISSTON & SONS,

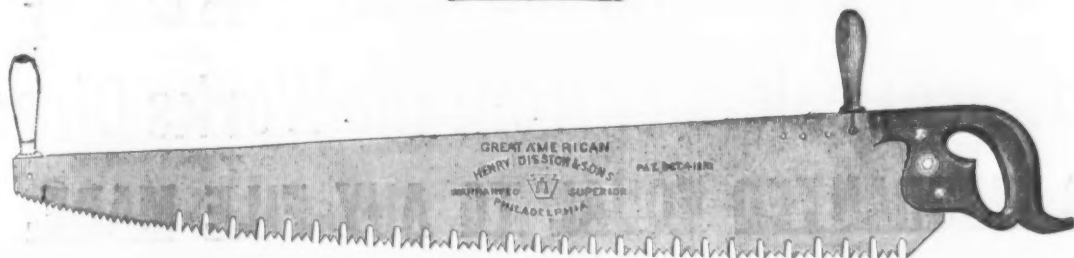
KEYSTONE SAW, TOOL,



STEEL & FILE WORKS,

Front & Laurel Sts.,

PHILADELPHIA.



Great American One-Man Cross-Cut Saw, With Supplementary Handle.

PATENTED JUNE 27, 1876, OCTOBER 4, 1870.

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IOWA BARB FENCE COMPANY, Limited,

93 John St., New York, and Johnstown, Pa.,

MANUFACTURERS OF

BURNELL'S PATENT

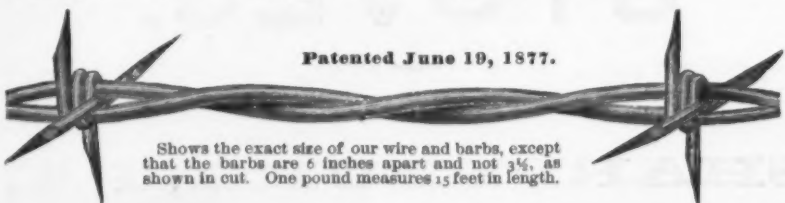
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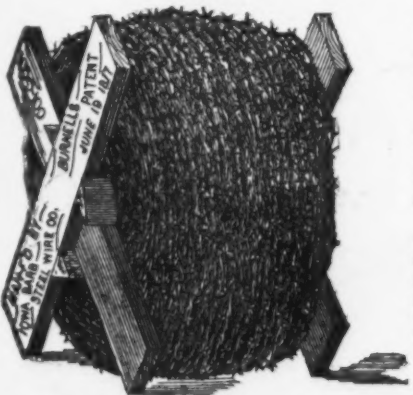
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Patented June 19, 1877.



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The use of Barbed Wire for fencing is no longer an experiment, but is an acknowledged necessity, as over **ONE HUNDRED THOUSAND MILES** of it were put up last year, and we confidently expect twice the quantity will be used this year, as there is no other material anywhere near as cheap, as lasting or effective.

**MAXIMUM
IN
STRENGTH.**

Samples, Circulars, &c., sent to any part of the world. Correspondence invited.

**MINIMUM
IN
WEIGHT.**

\$\$\$ \$ SAVED \$\$\$ \$

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MACHINES

BOTH NEW AND SECOND-HAND

COMPRISING
MACHINE AND BLACKSMITH
TOOLS OF EVERY DESCRIPTION.
WOOD-WORKING MACHINERY IN ALL ITS
BRANCHES. PORTABLE ENGINES. UPRIGHT AND HORIZONTAL STATIONARY ENGINES. 1 TO 300 HORSE POWER. **S.C.F. & CO.** LOCOMOTIVE FIRE-BOX, HORIZONTAL, and UPRIGHT BOILERS, 1 TO 100 HORSE POWER. WATER WHEELS, COTTON AND WOOLLEN MACHINERY, STEAM PUMPS, CRISTMILL MACHINERY, Etc., FULLY DESCRIBED, AND PRICES ANNEXED.

Send stamp for same.]

In our List No. 23.

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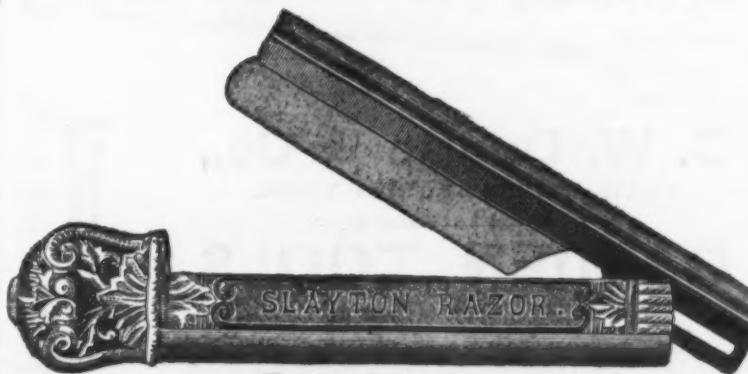
We have the Largest Assortment of Machinery to be found in the hands of any firm in the country.

Works and Main Office,
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S. C. FORSAITH & CO.

Branch Office and Wareroom, 209 Center street, New York City.

THE SLAYTON RAZOR.



This cut is exact size of Razor.

PERFECTION

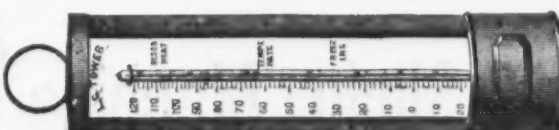
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Handles of German Silver, Nickel Plated. Blades of the Finest Steel in the World. Every Razor Fully Warranted.

L. C. TOWER, Thermometer Manufacturer,

Manufacturers Wanted.

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Of Every Description,
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J. STEVENS & CO.,
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MANUFACTURERS OF
SPRING CALIPERS AND DIVIDERS.

Also, Surface Gauges and Counter Sinks, Stevens' Patent Breech-Loading Sporting Rifles, double and single barrel; Shot Guns, Pocket Rifles, Pocket Pistols, and the noted Hunters' Pet Rifles. Our Shooting Gallery Rifle is the favorite everywhere.



TO STEAM USERS

Save Fuel and Money.

Obtain regular speed and prevent explosion by using

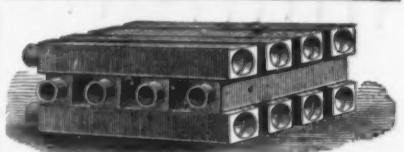
**PEERLESS
DAMPER REGULATOR,**

the greatest fuel-saving appliance ever invented. Adjustable to any pressure. In ordering mention pressure, illustrated Catalogue sent on application. We set it up and guarantee performance. Price, \$75.

AMERICAN STEAM APPLIANCE CO.

SOLE MANUFACTURERS,

13 and 15 Park Row, NEW YORK.



A. WYCKOFF,

Manufacturer of
Wyckoff Patent Wood Water Pipe,
Steam Pipe Casing,
Chain Pump Tube, Carbs, Reels, Rubber Valves, Chain, &c.
Established 1841. Send for pamphlet.
ELMIRA, N. Y.

WANTED—IN CANADA.

Responsible parties to manufacture

Buckeye Suction and Force Pump

on royalty. Thousands made and sold yearly in United States. Parties with extensive reputation only need apply. Address,

J. B. & S., Lock Box 163,
Springfield, Ohio.

ELEVATOR BOLTS.

Every Bolt made from the best of Norway Iron. Cups pinned on quickly. Rusty Bolts can be removed without injury. Broad, flat head, which gives smooth belt surface.

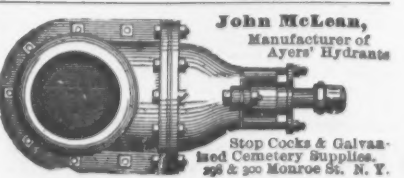
Pat. Aug. 6, 1879.

For sale by the trade.

Indianapolis Machine & Bolt Works

SOLE MAKERS,

Indianapolis, Ind.



John McLean,
Manufacturer of
Ayers' Hydrants

Stop Cocks & Galvanized Cemetery Supplies.
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KIMBALL'S PATENT "Solid Cast Steel" SHOVELS & SPADES.

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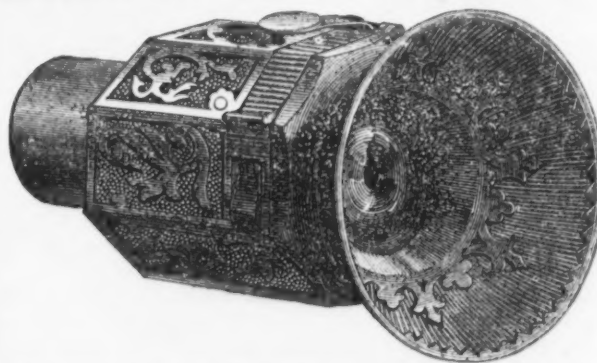
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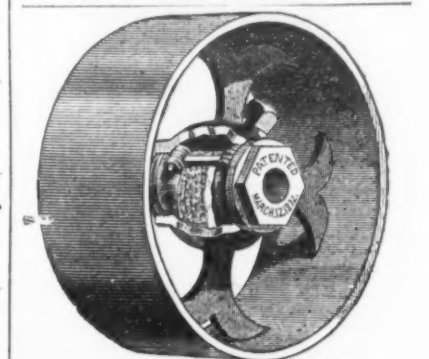
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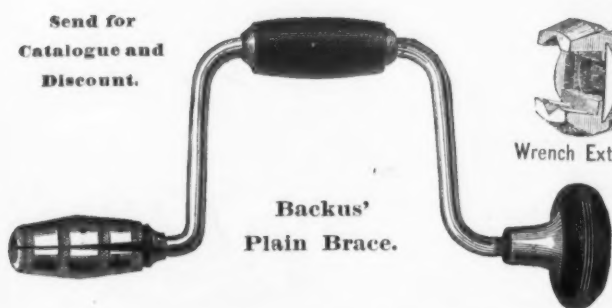
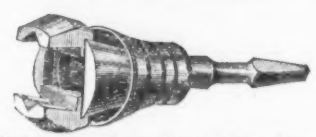
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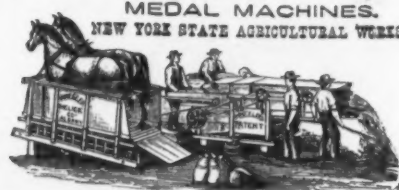
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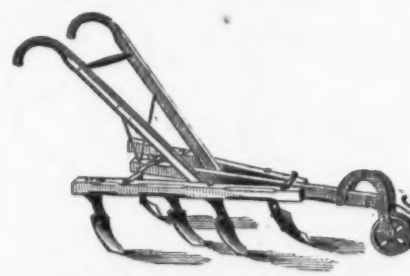
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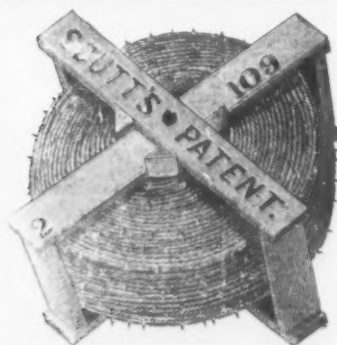


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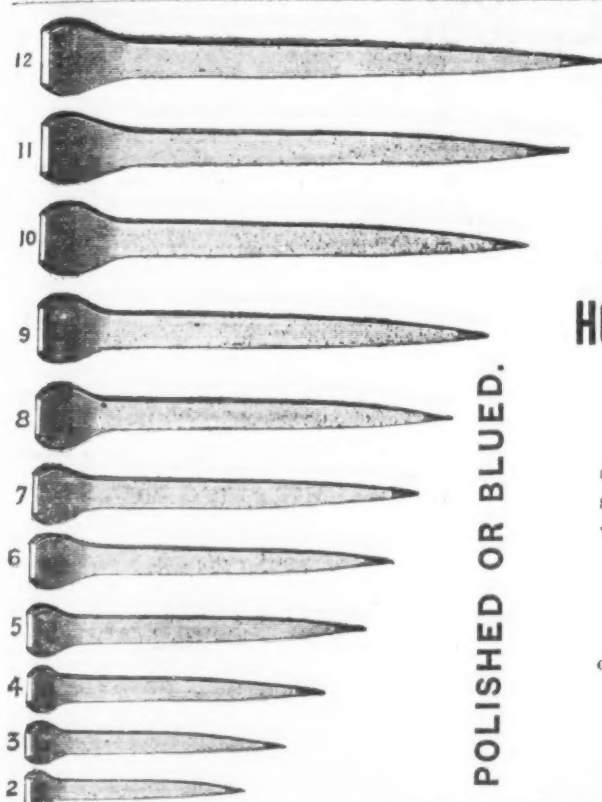


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Seencer J. R. & Son, Sheffield, England.	10
Fire Arms.	
Conway T. G., 20 Chambers, N. Y.	12
Hartley & Graham, 17 Maiden Lane, N. Y.	12
Fire Brick, Makers of.	
Borgner & O'Brien, Philadelphia, Pa.	12
Brooklyn Clay Retort and Fire Brick Works, Van Dyke St., Brooklyn, N. Y.	38
Frank Rudolph, 225 Fulton, N. Y.	38
Gardner Brothers, Pittsburgh, Pa.	38
Hall & Sons, Buffalo, N. Y.	38
Justice Philip S., Philadelphia.	38
Kreischer B. & Sons, 28 Goreck, N. Y.	38
Maurer Henry, 18 East 25th, N. Y.	38
Newton & Co., Albany, N. Y.	38
Ostrander James & Son, Troy, N. Y.	38
Perth Amboy Terra Cotta Co., Perth Amboy, N. J.	38
Valentine W. D. & Bro.	38
Watson John R., Perth Amboy, N. J.	38
Fire Escapes.	
John & Co., 122 Chambers, N. Y.	38
Flint and Emery Paper and Cloth.	
Bader, Adams & Co., 78 1/2 Phila.	38
Forges, Portable, &c.	
Foranough Bros. Co., 227 Market St., Philadelphia.	39
Cooke William, 6 Cortlandt, N. Y.	44
Empire Portable Forge Co., Cohoes, N. Y.	33
Foranough Bros. Co., 227 Market St., Philadelphia.	39
Keystone Portable Forge Co., 205 Carter, Phila.	13
Foundry Furnaces.	
Overman & Co., Cincinnati, O.	13
Paxson J. W. & Co., 11 Beech, Phila.	13
Whitehead Bros., 417 W. 14th, N. Y.	13
Fry Pans.	
N. Y. Stamping Co., 111 Avenue A, N. Y.	34
Furnaces, Makers of.	
Richmond & Potts, 118 S. 4th, Phila.	34
Furnaces, Horizontal.	
Stokes & Parrish, Philadelphia, Pa.	47
Furnaces, Vertical.	
Carv & Moen, 254 W. 20th, N. Y.	3
Galvanizing.	
Hoopes & Merry, 417 W. 14th St., N. Y.	34
Lefferts Marshall, 60 Beekman, N. Y.	4
Garden Tools.	
Dunlap C. W. & Co., 43 Chambers, N. Y.	27
Gearing.	
Comly J., Lincoln Park, N. J.	43
Governors.	
Judson Julius & Son, Rochester, N. Y.	43
Grindstones.	
Wood H. S. & Co., 30 West, N. Y.	16
Wool Water R., 23 and 25 Front, N. Y.	16
Gunningham & Sons, North Amherst, Ohio.	
Gunningham & Sons, North Amherst, Ohio.	16
Hammers, Makers of.	
Kittredge B. N. Y.	31
Kneeland F. L. (Dupont) 70 Wall, N. Y.	31
Lafin & Rand Power Co., 20 Murray, N. Y.	31
Hangers, Barn Door.	
Kidder Slide Door Hanger Co., Romeo, Mich.	34
S. H. & E. Y. Moore, Chicago, Ill.	34
Hardware Commission Merchants.	
Fernald & Sine, 100 Chambers, N. Y.	27
Heaton & Denick, 113 Chambers, N. Y.	27
Heaton & Denick, 113 Chambers, N. Y.	27
Hynes David & Co., 30 Church, N. Y.	27
Hardware Dealers.	
Lloyd, Supple & Walton, 62 Market, Phila.	19
Shepard Sidney & Co., Phila.	19
Hardware Importers.	
Baker Hermann & Co., 101 Duane, N. Y.	41
McCor & Co., 124 and 126 Duane, N. Y.	41
Hardware Manufacturers.	
Comly Jas., 473 Paul St., Philadelphia.	10
Coulter, Flaxier & Co., 37 Chambers, N. Y.	10
Enterprise Mfg. Co., Phila.	10
Lloyd, Supple & Walton, 62 Market St., Phila.	19
Miller's Rals Co., 24 Chambers, N. Y.	19
Perin & Galt Mfg. Co., Cincinnati, O.	19
Shepard Hardware Co., Buffalo, N. Y.	19
Stanley Works, New Britain, Conn.	8
Tebout W. J. & J. S. Chambers, N. Y.	8
Trenton Lock & Hardware Co., Trenton, N. J.	8
Union Mfg. Co., 43 Chambers, N. Y.	8
Van Wagoner & Williams, 32 Beekman, N. Y.	8
White Thos. C. & Co., Cincinnati, O.	8
Hardware Specialties.	
Cleveland Wrought Iron Fence Wks., Cleveland, O.	3
Security Blind Fast Co., Providence, R. I.	3
Shepard Sidney & Co., Buffalo, N. Y.	3
Shepard Sidney & Co., Buffalo, N. Y.	3
Sprague Novelty Works, Rochester, N. Y.	3
Harness Snaps.	
Cover Mfg. Co., West Troy, N. Y.	30
Harness Snaps.	
Bunger M. E. & Co., Indianapolis, Ind.	10
Hay Rakes.	
Holt & Co., East Wilton, Me.	39
Hinges.	
Cowles Hdw. Co., Unionville, Ct.	27
Smith H. D. & Co., 122 Chambers, N. Y.	3
Stanley Works, New Britain, Conn.	8
Hog Ringers.	
Chambers Bering & Quinlan, Decatur, Ill.	31
Holding Machines.	
Crane Bros. Mfg. Co., Chicago, Ill.	38
The Norwalk Iron Works Co., Norwalk, Conn.	44
Holding Machines.	
Box Alfred & Co., 312 Green, Phila.	41
Harrington Edwin & Son, Philadelphia, Pa.	41
Sellers Wm. & Co., Phila., and 19 Liberty St., N. Y.	43
Stokes & Parrish, Philadelphia, Pa.	47
Horse Nails, Makers of.	
Ansonia Horse Nail Co., 4 Warren, N. Y.	31
Bridgeport Brass Co., Bridgeport, Conn.	3
EP Nail Co., Cleveland, O.	31
National Horse Nail Co., Vergennes, Vt.	31
Perth Amboy Terra Cotta Co., Perth Amboy, N. J.	38
Saranac Horse Nail Co., Plattsburgh, N. Y.	31
Horse Shoes, Makers of.	
Bradley & Co., Philadelphia, Pa.	41
Burden Iron Works, Troy, N. Y.	5
Bussing A., 4 Warren, N. Y.	31
Rhode Island Horse Shoe Co., Providence, R. I.	31
Schoenberger & Co., Pittsburgh, Pa.	31
Hot Blast Stoves.	
Witherow & Gordon, Pittsburgh, Pa.	27
Housefurnishing Woods.	
Pierce Geo. N., Buffalo, N. Y.	20
Hydrants, &c.	
McLean John, 30 Monroe, N. Y.	28
Mohawk & Hudson Mfg. Co., Waterford, N. Y.	8
Hydraulic Jacks.	
Dudgeon Richard, 24 Columbia, N. Y.	9
Ice Breakers.	
Wharton J. S. L., Philadelphia, Pa.	36
Ice Cream Freezers.	
Dunne P. R., 18 Fulton, N. Y.	44
Lehigh Valley Ice Cream Freezer Co., Laconia, N. H.	44
Insurance, Boiler.	
Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.	41
Iron Brokers.	
Edgington & Co., 75 Wall, N. Y.	1
Etting Edward J., Philadelphia, Pa.	4
Galland P. W., 3 & 5 Wall, N. Y.	4
Wheeler & Co., 10 Wall, N. Y.	4
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Logan Iron & Steel Co., Philadelphia.	4
Quincy John W., 35 Wall, N. Y.	4
Iron Commission Merchants.	
Ballie J. F. & Co., 51 Wall, N. Y.	4
Heberton & Co., Philadelphia.	4
Wm. A. Chatterton, Philadelphia.	4
Mohr J. J., 410 Walnut, Philadelphia	4
Richardson J. O., 22 Dock, Philadelphia.	4
Waters J. B., 32 Walnut, Phila.	4
Iron, Pig, Importers of.	
Clark E. W. & Co., Philadelphia, Pa.	5
Lee James & Co., 71 Pine, N. Y.	5
Wheeler & Co., 10 Wall, N. Y.	4
Williamson James & Co., 59 Wall, N. Y.	4
Iron Dealers.	
Johnson & Bro., 122 South, N. Y.	4
Adams Hugh W., 45 Pine, N. Y.	4
Bonnell, Boston & Co., Youngstown, O.	4
Edwards & Sons, 70 Maiden Lane, N. Y.	4
Carmichael & Emmons, 135 and 137 Cedar, N. Y.	4
Conney Daniel F., 88 Washington, N. Y.	4
Edwards & Sons, 70 Maiden Lane, N. Y.	4
Egleston Bros. & Co., 150 South, N. Y.	4
Forsyth & Co., Manchester, N. H.	4
Hoffman J. W. & Co., 228 S. Fourth, Philadelphia.	4
Johnson B. F., 45 and 47 Water, N. Y.	4
Robinson & Co., 122 South, N. Y.	4
Lundberg Gustaf, 38 Kilby, Boston, Mass.	4
Middletown W. S., 30 John, N. Y.	4
Openings, &c.	
Wallace & Co., 87, 89 and 91 Elm, N. Y.	4
Pierston & Co., 24 Broadway, N. Y.	4
Pullman J. Wesley, Philadelphia, Pa.	4
Quincy John W., 35 Wall, N. Y.	4
Richardson & Co., 22 Dock, N. Y.	4
Swan John E. & Bros., Glasgow & Middlebrough, N. Y.	4
Wallace & Co., 87, 89 and 91 Elm, N. Y.	4
Warner A. B. & Son, 28 and 30 West, N. Y.	4
Williamson James & Co., 59 Wall, N. Y.	4
Wilson, R. & Co., 24 Pittsburgh, Pa.	4
Whitney A. R., 83 Hudson, N. Y.	4
Iron, Manufacturers' Agents.	
Edgington & Co., 75 Wall, N. Y.	1
Hoffman J. W. & Co., 228 S. 4th, Phila.	4
Levis Henry & Co., Philadelphia, Pa.	4
Iron, Manufacturers of.	
Albany & Rensselaer Iron & Steel Co., Troy, N. Y.	16
Illenworth Rolling Mill Co., Allentown, Pa.	16
Iron and Iron Works, Troy, N. Y.	16
Burden Iron Works, Troy, N. Y.	5
Coleman Rolling Mill Co., Louisville, Ky.	4
Hull Forge Co., Full, England.	20
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Kloman Andrew, Pittsburgh, Pa.	4
Lank & Co., Bechtelsheim, Prussia.	4
Logan Iron & Steel Co., Philadelphia, Pa.	4
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Rome Iron & Steel Co., 112 N. 3rd, N. Y.	4
Rome Merchant Iron Mills, Rome, N. Y.	4
Rowland James & Co., 520 N. Delaware ave., Phila.	44
Schoenberger & Co., Pittsburgh, Pa.	4
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Taylor & Boggs, Cleveland, O.	4
Union Iron Works, 122 South, N. Y.	4
Ullster Iron and Steel, 18 Wall, N. Y.	4
U. S. Iron and Tin Plate Co., Pittsburgh, Pa.	4
Wood & Co., 120 Bechtelsheim, Pittsburgh, Pa.	4
Wood Alan & Co., 510 Arch, Philadelphia.	4
Zug & Co., Pittsburgh, Pa.	4
Iron, Sheet, Manufacturers of.	
Good W. D. J., 130 Fulton, Phila.	4
Internals, Manufacturers of.	
Diets R. E., 41 and 43 Fulton, N. Y.	44
Ford & Co., 175 Chambers, N. Y.	44
Miller Edw. & Co., 35 Warren, N. Y.	44
Lawn Mowers.	
Lloyd, Supple & Walton, Philadelphia.	31
Leveling Instruments.	
Bicknell & Comstock, 27 Warren, N. Y.	10
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Distat Henry & Sons, Philadelphia.	28
Locks, Manufacturers of.	
Bonahan Wilson, Broadway and Kosuth, Brooklyn, N. Y.	35
Coulter, Flaxier & Co., 37 Chambers, N. Y.	38
D. K. Miller Lock Co., Philadelphia, Pa.	19
Murrie & Co., 175 Chambers, N. Y.	38
Hillebrand & Wolf, 110 S. 8th, Philadelphia.	33
Romer & Co., Newark, N. J.	33
Yale Lock Mfg. Co., 43 Chambers, N. Y.	1
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Good W. D. J., 130 Fulton, Phila.	4
Faul W. J., 213 Centre, N. Y.	28
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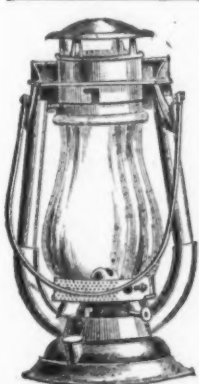
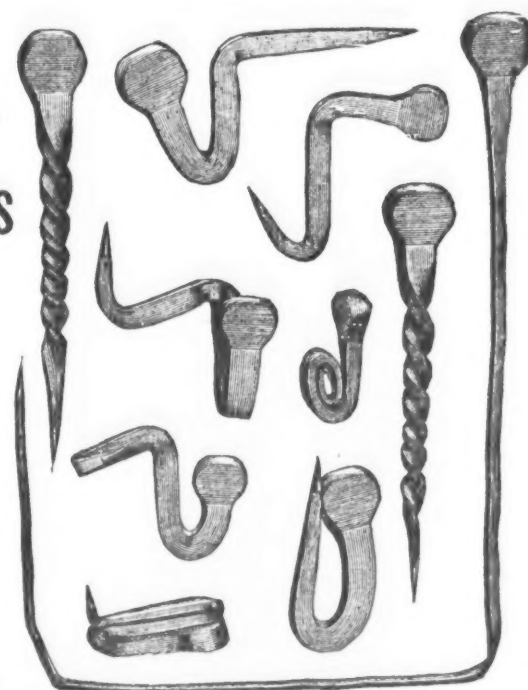
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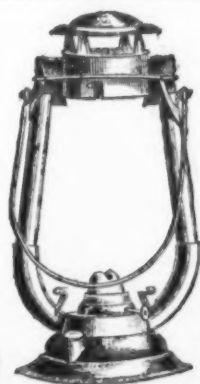
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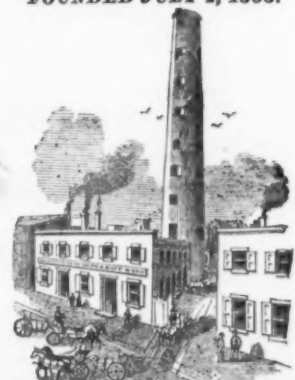


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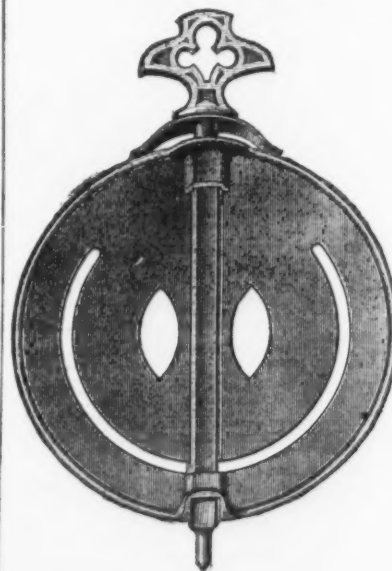
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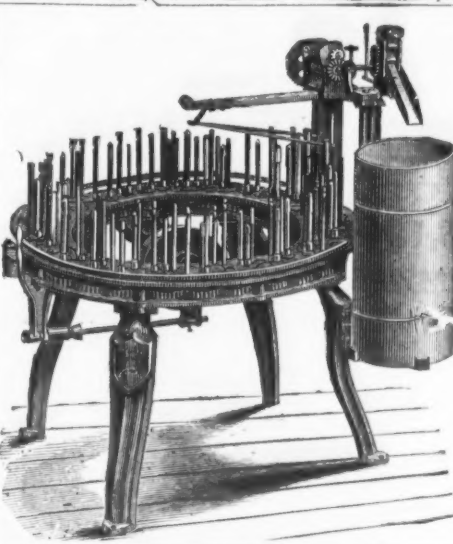


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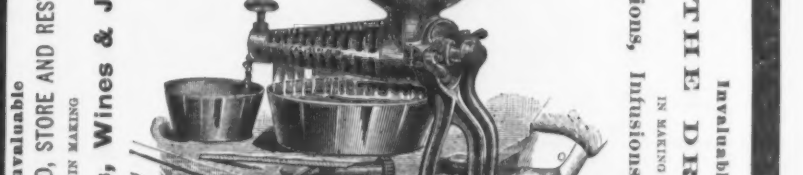
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Model	Model	Model	Model
Model 1	Model 2	Model 3	Model 4

Steel.

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R. H. WOLFF & CO.,

MANUFACTURERS, IMPORTERS, EXPORTERS & GENERAL MERCHANTS

MANUFACTURERS OF

CAST STEEL WIRE for all Purposes, Special Wire,
Market Steel Wire, Prime Coppered
Spring Wire, and of all Kinds of
Furniture Springs, &c.

IMPORTERS OF

**IRON & STEEL, WIRE RODS,
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Manufacturers of

CRESCENT STEEL,In Bars, Sheets, Cold-Rolled Strips, &c.
Polished, Compressed Drill Rods and Wire,
Warranted equal to any imported in *quality, finish and accuracy.*
Also Common Grades.

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Drills, Cold Chisels, Tools, Taps, Dies, &c.

COLD ROLLED STEEL for Clock Springs, Corsets, &c.
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Manufacturers of

BESSEMER STEELAND
Iron Rail and Fastenings,**SPRING STEEL**

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**WIRE OF ALL KINDS,
Tire, Axles and other Forgings,**Roller Plate, Galvanized and Black Sheet Iron, Corrugated Roofing and
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Best Warranted Cast Steel for Machinists' Tools,

Taps, Dies, Punches, Shear Blades, Chipping Chisels and Granite Rock Drills,

Extra Mild Center Steel, special for Taps,

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Warehouse, No. 12 North 5th St., Philadelphia.

Address A. M. F. Watson, General Sales Agent.

STEEL Gautier Steel.

See Page 3.

Steel.

NEWARK STEEL WORKS.

BENJAMIN ATHA & CO.,

Manufacturers of

BEST REFINED CAST STEEL

And grades of Steel specially adapted for Lathe Tools, Chisels and Taps and Dies.

Warranted most superior for TOOLS AND GRANITE ROCK DRILLS.

A full assortment of this universally approved OLD BRAND and other Steels for sale by

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Also Springs, Axles, Rake Teeth, &c.

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Bessemer Railway Steel,

MERCHANT BARS, TIRE AND SHAFTEING.

Railroad Iron, Pig Iron, Merchant and Ship Iron

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Sole Manufact'rs of **"CHOICE"** Extra Cast Steel.

Manufacturers of all Descriptions of Steel.

Manufacturers of Every Kind of Steel Wire.

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STEEL COMPANY OF SCOTLAND, LIMITED,

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Steel Rails,

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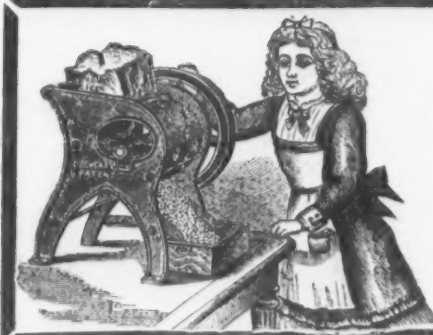
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Particular attention is paid to quality and temper for FILES, SAWS, EDGE TOOLS,
TABLE and POCKET CUTLERY, TOOLS, TAPS and DIES; also for COLD ROLLED STEEL for
CLOCK SPRINGS, CORSET CLASPS, &c.

A Large Assorted Stock of JOHN ROTHERY'S FILES always on hand.

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CREASEY'S PATENT

Five sizes, taking a piece from 3 pounds
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Manufactured and Sold by

J. S. L. WHARTON,
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Send for circulars. PHILADELPHIA.**RHODE ISLAND HORSE SHOE CO.,**

MANUFACTURERS OF

Horse, Mule & Snow Shoes of the Perkins Pattern.

Works at Valley Falls, R. I., and Buffalo, N. Y. Office, 31 Exchange Place, Providence, R. I.

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Special Steel**

FOR

LATHES, PLANERS, &c.Turns out at least double work by increased speed
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Steel. Neither hardening nor tempering required.

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SAMUEL OSBORN & CO.,
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Represented in the United States by

RANDALL & JONES,
10 Oliver Street, BOSTON.**STAR BRAND****BLACK LEAD STOPPERS,**FOR
Bessemer Converters and Siemens-
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Black Lead Crucibles, all kinds and sizes.

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Emery, Grindstones, &c.**Walter R. Wood,
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283 and 285 Front Street, New York.**WORTHINGTON & SONS.**

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Manufacturers of

Lake Huron Amherst
and Berea**GRINDSTONES.****BOYD & CHASE**

The largest manufacturers in the world of

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Of all description.

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TURKISH EMERYA. A. IRYNE & CO., Agents,
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Send for quotations and samples.

PURE EMERY,

Manufactured from

The Finest Turkish Ore

BY CHARLES ALDEN.

Consumers will find it to their interest to apply
direct to our mills and save the commissions of
middlemen.

Assorted Sizes Always on Hand.

Quality, grades and prompt execution of orders
guaranteed. Address**The Ashland Emery Co.,**
PERTH AMBOY, New Jersey.**St. Louis Malleable Iron
Company,**2116 MARKET STREET,
ST. LOUIS, MO.

HENRY M. FILLEY, President. JOHN D. FILLEY, Secretary.

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**Malleable and Gray
Iron Castings,
GENERAL HARDWARE, &c.**

Steel.

THE EDGAR THOMSON STEEL CO.,
LIMITED.

MANUFACTURERS OF



General Office and Works at Bessemer Station (Penn. R. R.), Allegheny County, Pa.

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The Company warrants its rails equal in quality to any manufactured in the United States.

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North Chicago Rolling Mill Co.

ESTABLISHED 1857.

CAPITAL, \$3,000,000.

INCORPORATED 1869.

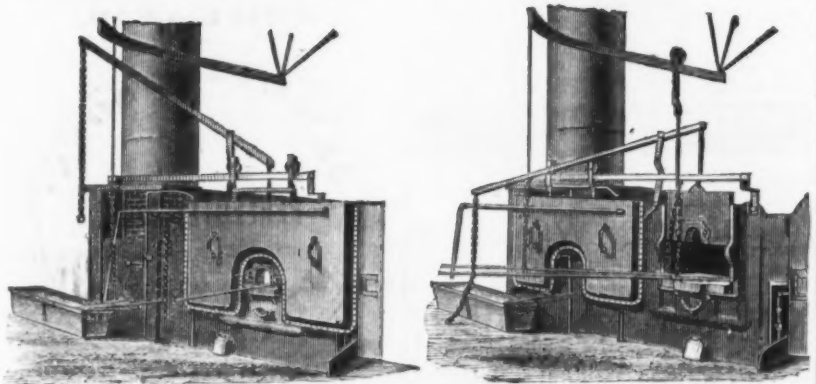
Works at Chicago, Ill., and Milwaukee, Wis.

MANUFACTURERS OF

MERCHANT BAR, FISH PLATES, PIG METAL,
IRON RAILS & BESSEMER STEEL RAILS.

Fish Plates.....	20,000 tons
Pig Metal.....	40,000 "
Iron Rails.....	80,000 "
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Total Capacity per year.....	190,000 "

OFFICES:

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Crystallized Black Oxide of

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Suitable for the manufacture of Ferro-Manganese, Spiegeleisen, Bessemer Pig, &c. Also, fine ground and granulated, especially prepared for

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Guaranteed at a speed of 10,000 a minute, and at any pressure for 10 years.

DEOXIDIZED BRONZE,

Superior to Phosphor Bronze or any other alloy of Copper and Tin for Machinery Journals.

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HENRY DISSTON & SONS.

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Window Shade Nails,

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Veneer Nails, Label Tacks and small Nails of all kinds, Cabinet Nails, Barbed Lock Nails, Cigar Box Nails, &c., &c., put up in bulk, 5 lb. packages, papers, or as wanted.

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COVINGTON, KY.

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PUBLISHED EVERY SATURDAY.

THE OLDEST AND CHIEF REPRESENTATIVE OF THE IRON, HARDWARE AND METAL TRADES.

OFFICE: 44a CANNON STREET, LONDON, E. C.

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Notes of Novelties.—This is a department of the journal always watched with interest by the trade, as it contains an account, from week to week, of the novelties which manufacturers and inventors are introducing to the notice of the trade. These articles are freely illustrated.

Special Correspondents.—The Ironmonger has a deserved reputation for its special correspondence from all the principal Continental, British and manufacturing centers. The writers are gentlemen holding important positions in the districts with which they are connected, and possess facilities for acquiring information specially suited for the columns of the Ironmonger. The Weekly, Legal Notes, Trade Notes, Bankruptcies, Foreign Notes, Colonial Notices, Merchants' Circulars, &c., are each departments of the journal, containing a digest of all matters of direct interest to the Iron, Hardware and Metal Trades. In addition to the above, there is a carefully classified list of Patents, together with Editorial Notes, French, Belgian and other Special Correspondence.

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to the Ironmonger and Metal Trades' Advertiser, with which is sent every fourth week the Foreign Supplement (see below), may commence from any date, but are not received for less than a year complete. The rate is \$5 per annum, inclusive of postage to any part of the world outside Great Britain. To every subscriber is presented, free, in the course of his year, a handsome and useful Ironmongers' Diary and Text Book, a work sold to non-subscribers at 75 cents.

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THE IRONMONGERS' DIARY AND TEXT BOOK.

This is an annual, presented free to every Subscriber to the IRONMONGER AND METAL TRADES' ADVERTISER. It contains a large number of ruled skeleton pages for diary and other entries, and in addition much useful reference information, varied from year to year. It is handsomely bound in cloth, gilt; and as copies are used in thousands of establishments for a whole year, it is obviously a medium of exceptional value for advertisements. Sold to non-subscribers at 75 cents.

THE FOREIGN SUPPLEMENT

Is published every fourth week in connection with the extensive and world-wide circulation of the Ironmonger itself. The dates of its publication for the next twelve months will be as follows:
JULY 24, AUGUST 21, SEPTEMBER 18, OCTOBER 16, NOVEMBER 13, DECEMBER 11, JANUARY 8, 1881, FEBRUARY 5, MARCH 5, APRIL 2 and 30, MAY 28, JUNE 25.

This Supplement is published in

FIVE LEADING COMMERCIAL LANGUAGES

of the world, including English, and is sent to all the countries where they are spoken, thus placing the contents of the Ironmonger not only within reach of the native language of eighty millions of German, forty-two millions of French, twenty-eight millions of Italian, and fifty-one millions of Spanish speaking people; or, in all, over two hundred millions of inhabitants in the principal nations where the best purchasers of manufactured goods are to be found.

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THE WHOLE FOREIGN HARDWARE TRADE,

so far as our experience of twenty years is concerned, will be covered by THE FOREIGN SUPPLEMENT at least twice a year. Thus a Price List or Advertisement inserted in the Ironmonger and Foreign Supplement is a strikingly powerful and most efficient way of publicity not to be compared with any of the other ordinary channels of communication.

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BEST AND CHEAPEST.
Established 1845.
Office, foot of Houston Street, East River,
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NEWTON & CO.,

ALBANY, N. Y., Manufacturers of

FIRE BRICK

Stove Linings,

Range and Heater Linings

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M. D. Valentine & Bro

Manufacturers of

FIRE BRICK And Furnace Blocks DRAIN PIPE & LAND TILE.

Woodbridge, - - - N. J.

BORGNER & O'BRIEN,

Manufacturers

FIRE BRICK

Edge Pressed Furnace Blocks,
CLAY RETORTS, TILES, &c.,
Twenty-third Street,
Above Race, PHILADELPHIA.
Twenty years' practical Experience.

PERTH AMBOY TERRA COTTA CO.,

Successors to

A. HALL & SONS, Perth Amboy, N. J.,
ARCHITECTURAL TERRA COTTA

FIRE BRICK.

170 Broadway, NEW YORK.

Brooklyn Clay Retort

AND
FIRE BRICK WORKS.

Manufacturers of Clay Retorts, Fire Brick, Gas
House and other Tile, Cupola Brick, &c. Dealers in
and Miners of Fire Clay and Fire Sand. Clay bank at
Burr's Creek, New Jersey. Manufacture: Van Dyke,
Elizabeth, Richards and Partition Sts., Brooklyn, N.Y.
Office: No. 26 Van Dyke St.

Watson Fire Brick Manufactory,

ESTABLISHED 1856.

JOHN R. WATSON, Perth Amboy, New Jersey.
Manufacturer of

FIRE BRICK,

For Rolling Mills, Blast Furnaces, Foundries,
Gas Works, Lime Kilns, Tanneries, Boiler
and Grate Setting, Glass Works, &c.
Fire Clays, Fire Sand, and Krollin for Sale.

HENRY MAURER,

Proprietor of the

Excelsior Fire Brick & Clay
Retort Works,
Manufacturer of FIRE BRICK, HOLLOW
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WORKS: PERTH AMBOY, NEW JERSEY.
Office & Depot, 418 to 422 East 23d St., N. Y.

TROY FIRE BRICK WORKS,

Troy, N. Y.,

JAMES OSTRANDER & SON,

ESTABLISHED 1848,
Manufacturers of

FIRE BRICK,

Tuyeres, Tiles, Blast Furnace Blocks, &c. Miners and
Dealers in Woodbridge Fire Clay and Sand, and Staten
Island Kaolin.

Established 1864.

GARDNER BROTHERS,

Manufacturers of

STANDARD SAVAGE FIRE BRICK,
TILE & FURNACE BLOCKS,

OF ALL SHAPES AND SIZES.

Clay Gas Retorts and Retort Settings, and
Miners and Shippers of Fire Clay.
Office: 115 Smithfield St., Pittsburgh, Pa.
Works: Mt. Savage Junction, Md., and Lockport, Pa.

HALL & SONS,

FIRE BRICK,

Buffalo, N. Y.

MILLER'S BRICK PRESSES

(Established 1844).

FIRE AND RED BRICK,
And Brickmakers' Tools in General.

SAML. P. MILLER & SON,
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ALUMINA and
SILICA

FIRE BRICKS

Works,
BROOKLYN, on
the East River.

Through Cars, Canal Boats
and Vessels loaded direct from the
Works to all points.

PURE SILICA FIRE BRICK,

MADE BY THE

Landore Siemens Company,

Specially for OPEN-HEARTH FURNACES.

More "heats" obtained from them than from any other Bricks known.

Imported, to order only, by

PHILIP S. JUSTICE, Sole Agent in United States,
14 NORTH FIFTH STREET, PHILADELPHIA.

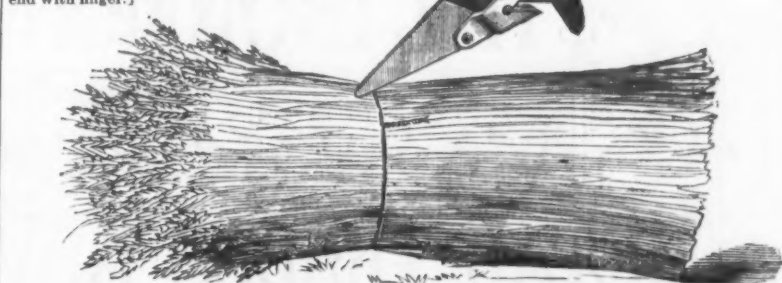
Common Sense Band Cutter,

A Perfect Tool, for Cutting and Removing Twine or Wire Bands from
Bundles of Grain Before Threshing.

The only Band Cutter that does not grasp several
straws with the band; that is absolutely certain in its
operations, and does not fatigue the hand. It will cut,
grasp and remove wire, string or paper bands by one
single movement. No squeezing, no chafed hands, no
blisters, no shears, no slow, hard work, and while
threshing it will pay for itself every hour.

EVERY FARMER MUST HAVE ONE
For use with his Self-Binder during the harvest, and
when threshing he can save all of the binding material.
Price \$5.00 per dozen, net.

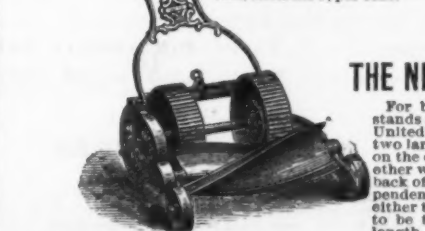
Directions.—Push into bundle, pull out, and
by the same movement (or swing of the arm)
push point lightly against a board standing in a
box to discharge the band. The knife being
self-adjusting is always in proper position.
[For cutting off the ends of wire, push curved
end of knife with thumb, and pull the other
end with finger.]



Every one. Warranted.

UNIVERSAL CORN HUSKER.

This Husker is superior to
any in the market, being ad-
justable to the hand, either
large or small. It is made of
solid brass; easy in the hand,
and can be used either with
or without gloves or mittens.
It is nicely put up in one-quarter
gross pasteboard boxes,
and is packed 20 boxes (1
gross) in a case. Price, \$25.00
per gross, net. In full case
lots, discount 25 per cent.



THE NEW CHARTER OAK LAWN MOWER.

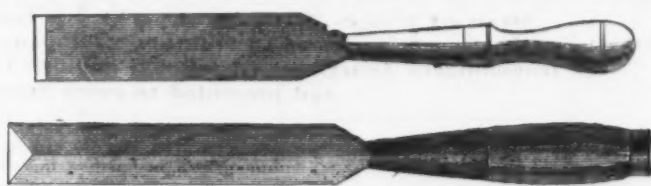
For beauty, perfection, durability and popularity, "It
stands at the head of the list of Lawn Mowers, both in the
United States and Europe." The machine is mounted on
two large driving wheels or pulleys, and instead of being
on the outside of the frame, to run in the uncut grass like
other wheel mowers, they are placed inside of the frame
back of the cutting blades, running on a shaft each inde-
pendent of the other, allowing the machine to be turned
either to the right or the left without injury to the soil, and
to be turned around in a circle no greater than its own
length, and cutting at the same time. For prices, address

GRAHAM & HAINES, Agts., 113 Chambers N. Y. St.

COULTER, FLAGLER & CO.,

87 Chambers and 69 Reade Sts., New York,

Hardware Manufacturers' Warehouse



THE NEW HAVEN EDGE TOOL CO.

Office and Warehouse of Union Hardware Co.: Draw Knives, Chisels, &c.; Deane Bros., Bits, Cork
screws, &c.; Richardson Bros., Axes of all kinds; Brooks Edge Tool Co.'s Axes, Hatchets, &c.; M. Price,
Hatchets, &c.; J. & W. Rothery, Extra Hand Cut Files; L. D. Frost, Carriage Bolts, Refined and Norway Iron;
Cowles Hardware Co., Screwdrivers, Mining Knives, &c.; Rider, Wooster & Co., Anti-Friction Barn Door
Hangers, &c.; H. B. Hawley, Shears of all kinds; Walden Knife Co., Pocket Cutlery; American Screws; N. Y.
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Griswold, Cast Steel Bits; Lancaster Lock Works, Jail Locks.

Established
1855.

KEYSTONE WORKS.

Centennial Award
1876.

GEORGE GRIFFITHS,

MANUFACTURER OF



Shovels, Spades, Scoops, Coal Hods, &c.,

Nos. 511, 513 and 515 LOCUST ST.,

PHILADELPHIA, PA., U. S. A.

Send for Price List.

SANDS' TRIPLE MOTION WHITE MOUNTAIN ICE CREAM FREEZERS.

THE WHITE MOUNTAIN FREEZER COMPANY are headquarters for Ice Cream Freezers and Ice
pushers, being the only firm in the United States who manufacture all parts of the raw material. The
examining Committee, consisting of 50,000
citizens of the United States have recom-



HAND FREEZER.
2 to 25 qts.
\$3.50 to \$24.00.

HAND OR POWER.
25 and 50 qts.
\$75.00 and \$175.00.

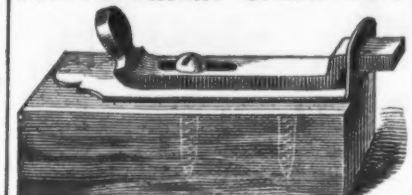
HAND OR POWER.
ICE CRUSHER.
\$75.00.

White Mountain Freezer to all per-
sons in the world for the following rea-
sons: We have used them; they freeze
quicker than any other; they save time,
salt and ice; the triple motion makes
smooth cream without lumps; makes
more of it; galvanized iron outside; tin
inside; no zinc in contact with the
cream; easily adjusted; substantially
made; simple in construction; perfect
in results. Send for descriptive circular
and discount of this celebrated Freezer.
Address,

White Mountain Freezer Co.,
Laconia, N. H., U. S. A.

SPECIAL ATTENTION GIVEN TO EXPORT ORDERS.

HYATT'S PATENT SPRING BOLT.



Patented Jan. 20th, 1878.

For Fastening Cabinet Ware, Closet and House Doors, &c.

We call the attention of the trade to these Wrought
Brass and Iron Bolts, as being the best and cheapest
in the market. Sizes, two inches and upward, both
plain and neck bolts. Two screws fasten the bolt
and bed-plate to the wood; no others are required;
the bed-plates are made of brass, from which the
spring is cut and raised, upon which the bolt slides
with an easy, elastic movement, saving expense of
screws and producing a strong, handsome and
cheap Bolt. Price list furnished on application.

BRASS GOODS MFG. CO.,

43 Chambers St., New York.

We also manufacture all kinds of Brass and Tin
Goods, Drop Bases, Thimbles and Roses for Door
Knobs, Plate Escutcheons, Brass Labels, Patent Mirror
Business Cards, &c.

Established 1838

Bevin Bros. Mfg.

Co.,

Easthampton, Ct.

Manufacturers of

SLEIGH BELLS,

House, Tea, Hand,

Gong Bells, &c.

Bell Metal Kettles.

WESTON DYNAMO-ELECTRIC MACHINE

NICKEL.

The rapid increase in the use of Nickel-Plating
owing to the introduction of the Weston Machine
and the very low price of nickel material, enables us
to give greatly reduced estimates for complete
outfits.

We are furnishing outfits specially adapted for
Stove Work, giving a pure white deposit on plain
or metal surfaces.

Outfits complete, with Dynamo-Electric Machine
Tanks, Anodes, Solution, &c., &c., \$50.

We beg to refer to the following Stove Manufac-
turers among 500 other houses using the Weston
Machine: Richardson & Boynton, S. S. Jewett &
Co., Fuller, Warren & Co., Ferry & Co., Detroit
Stove Works, Michigan Stove Co., Co-operative
Stove Co., E. & C. Gurney, Hamilton & Toronto,
and many others.

WE CALL ATTENTION TO INFRINGEMENTS OF THE WESTON
MACHINE, in which Automatic Switches are used to
prevent change of current. The Weston Co. are owners
by grant or purchase of all forms of Automatic
Switches for Plating Machines. The adoption of these
machines will certainly lead to great loss to parties
purchasing or using them.

CONDIT. HANSON & VAN WINKLE
Sole Agents NEWARK, N. J. U. S. A.

NEW YORK OFFICE, 92 & 94 Liberty St.

ENGLISH AGENCY: 18 Caroline Street, Birmingham.

The Leading Wringer of
America.

SIMPSON & GAULT,

(Peerless Wringer Co.)

European Offices,
New York Office, Place Vendôme, Paris.
79 Chambers St. 7 Poultry, London.

Office and Factory,
CINCINNATI, OHIO.

PEERLESS Clothes Wringers,

Sold by the Jobbing Trade everywhere.



Most Saleable Wringer in the Market.
TRY A SAMPLE ORDER.

Users of Shafting
SHOULD TRY
THIS
Positive Lubricator
Cheapest and cleanest.
No drip, no waste.
Warranted not to gum.
Feed according to speed
of shaft.

W. J. FAUL,

Patentee & Sole

Manufacturer,

218 Centre St.,

New York.

Send for circular.



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PATENT

COMBI-

NATION

RAZOR

STROP,

Manufactured by COPELAND, HALL & Co.,
(Successors to H. O. Hall & Co.),
Rochester, N. Y.

John T. Lewis & Bros.

No. 231 South Front St.,
PHILADELPHIA.



TRADE MARK.

MANUFACTURERS OF

Pure White Lead, Red Lead, Litharge,
Orange Mineral, Linseed Oil,
AND PAINTERS' COLORS

Brooklyn White Lead Co.



TRADE MARK

White Lead, Red Lead & Litharge.
No. 182 Front Street,
NEW YORK.

JOHN JEWETT & SONS

Manufacturers of the well-known brand of

WHITE LEAD.



TRADE MARK.

ALSO MANUFACTURERS OF

LINSEED OIL.

182 Front Street, NEW YORK.



TRADE MARK.

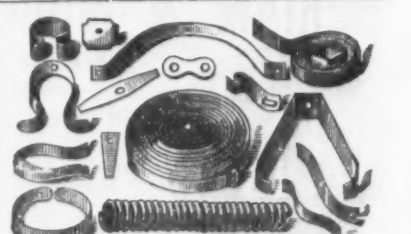
The Atlantic White Lead
and Linseed Oil Co.,

MANUFACTURERS OF

White Lead (Atlantic), Red Lead,
Litharge & Linseed Oil.

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287 Pearl Street, New York



DUNBAR BROS.,

Manufacturers of

Clock Springs and Small Springs

of every description, from best Cast Steel.

BRISTOL, CONN.

W. & J. TIEBOUT,

Manufacturers of

Brass, Galvanized & Ship
Chandlery Hardware,

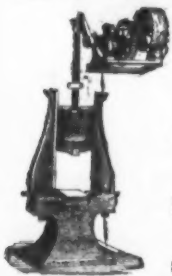
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STOP ORGANS ONLY \$97.75. NEW PL-
ANOS, \$145 to \$1600. Midsummer hol-
iday offer, Illustrated, FREE. Address
DANIEL F. BEATTY, Washington, N. J.

BEECHER & PECK,

Successors to Milo Peck, Manufacturers of

PECK'S DROP PRESS



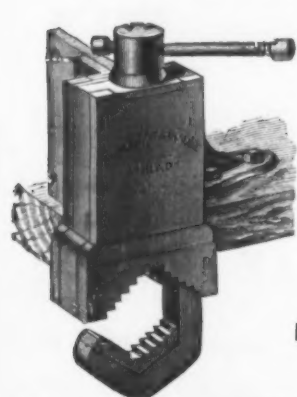
11 Regular Sizes. Hammers from 50 lbs. to 2500 lbs.
WE HAVE A LARGE STOCK OF SPECIAL DROP PATTERNS.

Special attention given to the making of all Drop Dies.
Special Machinery fitted up to order.

Send for Price List.

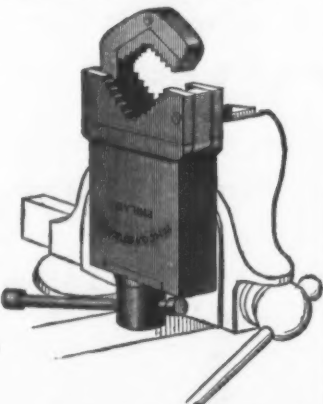
New Haven, Conn.

IMPROVED PIPE-FITTERS' VISE.



STRONG,
LIGHT,
EFFICIENT,
CHEAP.

PRICE, \$8.00.



To meet the requirements of the large number of persons who have use for such an article, we invite attention to our Improved Pipe Vise. This Vise can be used either as a permanent fixture to work bench, attached to angle plate or can (unlike others) be held between the jaws of any Machinist's or Blacksmith's Vise; the movable jaw being OPEN ON SIDE permits work to be gripped at any desired point without slipping it in from end, and allows of FITTINGS BEING HELD SECURELY; the Box is made of Malleable Iron, the Screw of Wrought Iron, and the remainder of Solid Steel throughout. The Steel Gripping Jaws can be duplicated and replaced at any time when worn out. It is a very convenient tool, well adapted to the wants of Plumbers, Pump Fitters, Well-Drivers, and all who have use for a tool that is strong, light, efficient and cheap which can be readily carried about with kit of tools.

MANUFACTURED BY

PANCOAST & MAULE,

243 and 245 South Third Street, Philadelphia.

THE COLUMBIA BICYCLE.



Bicycle riding is unsurpassed as a method of traveling, whether for speed, sport or the renewal of health. No horse can compare with the Bicycle for endurance; no other pastime is half so fascinating, and the exercise is recommended by the medical profession as being most conducive to health. Appleyard rode 100 miles over a common turnpike road in 7 hours, and Waller has accomplished 1400 miles in 6 days.

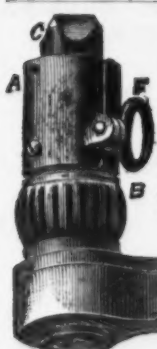
Send 3-cent stamp for 24-page catalogue containing price-lists and full information, or 10 cents for catalogue and copy of "The Bicycling World."

THE POPE MFG. CO.

No. 65 Summer Street,
BOSTON, MASS.

LATHROP'S

SELF-FEEDING RATCHET DRILL



The only Ratchet drill that combines **Simplicity, Efficiency and Durability** with a perfectly reliable and powerful **Self-Feed**, capable of being instantly adjusted to any required cut. We guarantee our Ratchet to do twice the amount of work that can be done by any other ratchet in the market. To responsible parties we send a sample Ratchet for 30 days' trial.

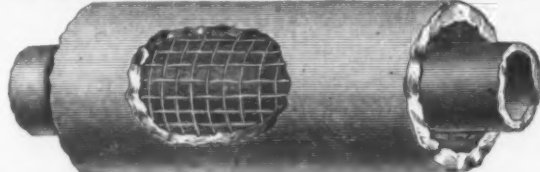
S.P. LATHROP, PAT. OCT. 20, 1875.

SEND FOR PRICELIST.

LATHROP & CO.,
NEWARK, N. J.

ASBESTOS MATERIALS, FIBER, MILLBOARD, PACKING & CEMENT.
THE NATIONAL STEEL TUBE CLEANER.
Saves its cost every time it is used.

The Patent "Air Space" Coverings for Steam Pipes, Hot-Blast Pipes, Boilers, &c.



Plastic or Hair Felt, with or without the Patent "Air Space" Improvement.

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T. G. CONWAY, 90 Chambers Street, New York,



Sole Agent for

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Rupertus' Revolvers, Breech-loading Shot Guns and Rifles; Nichols Cutlery Co.'s Table Knives and Forks; Star Cutlery Co.'s Pocket Knives.

Rupertus' Single Breech-Loading Shot Gun, Twist Barrel.



Manufacturers of GALVANIZED PUMP CHAIN FOR CHAIN PUMPS.



PATENT

Expanding, Self-Draining
RUBBER BUCKET.

Manufactured only by
L. M. RUMSEY & CO.

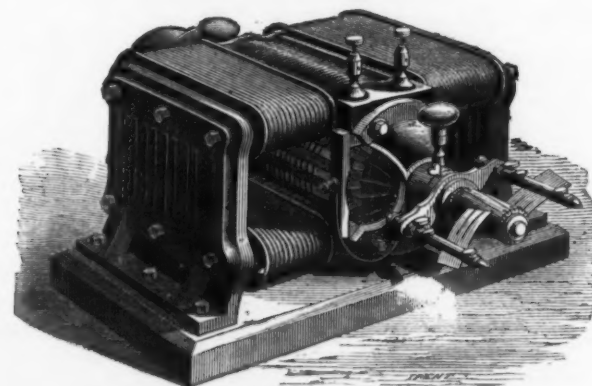
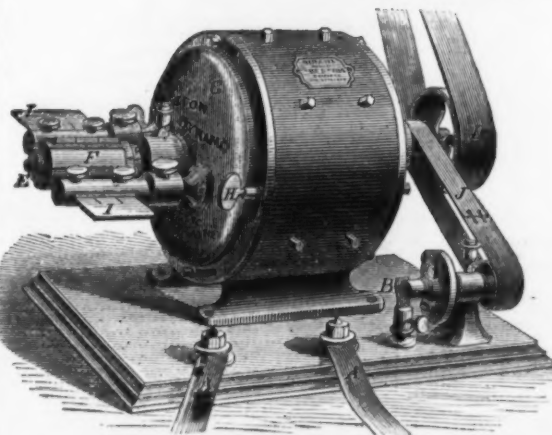
WESTON DYNAMO-ELECTRIC MACHINE CO.

286 Washington Street, Newark, N. J., U. S. A.,

N. E. Weston Electric Light Co., 10 Herald Building, Boston, Mass.,

MANUFACTURERS OF

Machines for Electric Light, Electrotyping and Electro-Plating.



ARE MAKING

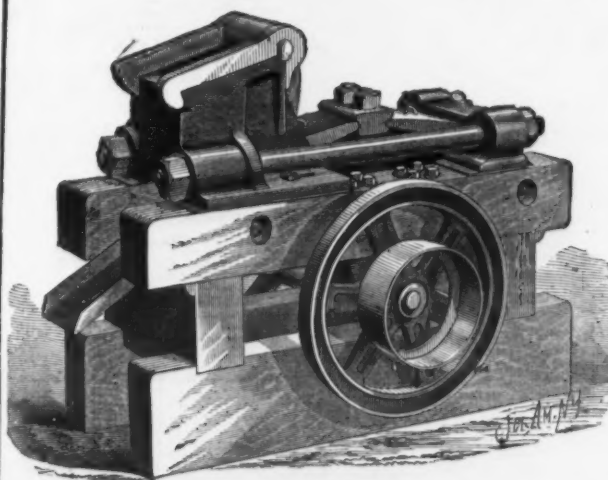
THE MOST POWERFUL, SIMPLE AND COMPACT ELECTRIC LIGHT MACHINE IN THE WORLD.

By actual tests this machine has been found to yield more than double the amount of light per horse-power obtained from the best machines built in this country.

Please send full particulars regarding buildings or localities to be lighted, available power, &c.

Centennial Gold Medal American Institute, 1876. Medal of Superiority, American Institute, 1877.
Centennial Medal, Philadelphia, 1876. Paris Medal, 1878.

Important to Railway Companies, Cities and Mine Owners.



BLAKE'S CHALLENGE ROCK BREAKER OR Sectional Cushioned Crusher.

Patented Nov. 18, 1879.

Will be found the most economical and reliable crusher ever offered to the public for crushing

RAILWAY BALLAST, ROAD METAL, STONE FOR CONCRETE, QUARTZ, FELDSPAR, BARYTA, FLINT, EMERY, CORUNDUM, MANGANESE, PLASTER,

SOAPSTONE, &c., &c. This machine dispenses with cast iron frame and pitman of our old forms. All strains are on wrought iron or steel.

Over 50 Medals, including Paris Gold and Silver Medals.

ADDRESS

BLAKE CRUSHER CO., Sole Makers,
New Haven, Conn.

THE "EAGLE" ANVIL.

WARRANTED!!



LATEST PATENT
APRIL 24, 1877.

ESTABLISHED
1843.

Better than the Best English Anvil. Face in one piece, of BEST TOOL CAST STEEL. PERFECTLY WELDED, perfectly true; of hardest temper and never to come off or "settle." It does not bounce the hammer back, and therefore can do more work with lighter hammer. Horn of tough untempered steel, never to break or bend. Only Anvil made in United States fully warranted as above. None genuine without our trade-mark.

PRICE LIST, APRIL 1, 1880.

ANVILS weighing 100 lbs. to 800 lbs. 10 cents per lb.

SMALLER ANVILS ("MINIMS")

Weighting about

No. 1 2 3 4 5 6 7 8 9 10

Weighting about

No. 1 2 3 4 5 6 7 8 9 10

N. B.—These are the RETAIL PRICES. The only additional cost will be the freight to the purchaser's place of residence.

The 30, 000 is silver plated, and is mailed postpaid to any part of the United States on receipt of the price.

EAGLE STAKES.

No. 1 2 3 4 5 6 7 8 9 10

Size of face, square

1 1.75 2 2.50 3 3.75 4 4.50 5 5.50 6 6.50 7 7.75

SOLD BY
New York—RUSSELL & ERWIN MANUFACTURING COMPANY, DURRIE & McCARTY, TENNIS & WILSON.
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PUMPS

AND

AIR COMPRESSORS.

PHILA. HYDRAULIC WORKS,
PHILADELPHIA.

NATIONAL STEAM PUMP.

Adapted to every possible Duty.

Send for Illustrated Catalogue.

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New Brunswick, N. J.

New York Salesroom, 40 Cortlandt St.

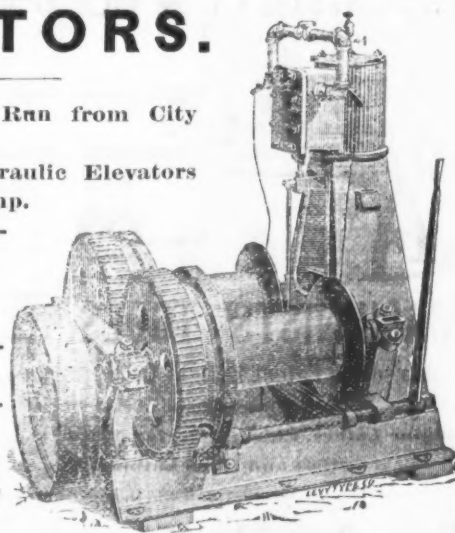
ELEVATORS.**PASSENGER ELEVATORS.**

Hydraulic Elevators to Run from City Pressure.
Condensed Air and Hydraulic Elevators Operated by Steam Pump.
Independent Steam Elevators.

Iron Furnace Hoists.
Belt Power Elevators.
Portable Hoisting Machines.
All kinds of Hoisting Machinery a specialty.

STOKES & PARRISH,

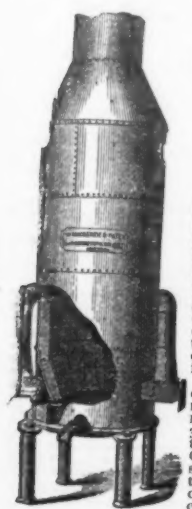
3001 Chestnut Street,
PHILADELPHIA.



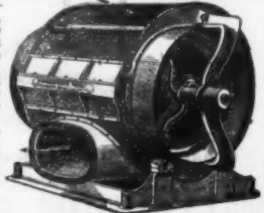
DOUBLE DRUM PORTABLE HOIST.

THE MACKENZIE PATENT CUPOLA & BLOWER.

Send for circular to
Smith & Sayre Mfg. Co.,
PROPRIETORS, 21 Cortlandt St., New York.



This Cupola has made a great revolution in melting iron. It differs from all others in having a continuous tuyere, or in other words, the blast enters the fuel at all points. Above one ton capacity per hour, they are made out in form. This brings the blast to the center of the furnace with the least resistance and smallest possible amount of power, and in combination with the continuous Tuyere causes complete diffusion of the air throughout the furnace, and uniform temperature, melting ten or fifteen tons an hour with the pressure of blast required to melt two or three tons in an ordinary Cupola. It also enables us to save very largely in time and fuel, the experience of our customers showing a gain of twenty-five to fifty per cent. in time, and twenty-five to forty per cent. fuel over the ordinary Cupola, and a better quality of casting, especially in light work. This is due to the thorough diffusion of the air and more perfect combustion, extracting less carbon from the iron, making a softer and tougher casting. We manufacture these Cupolas of any desired capacity, numbered from 1 to 25, inclusive, the numbers indicating the melting capacities in tons per hour—No. 1, one ton; No. 2, two tons; No. 3, three tons per hour, and so on up to 25, or 30 tons. We have improved the construction of these Cupolas in every way, have increased their strength and durability, and sought to make them as convenient for working and repairs as our own and the experience of our customers could suggest.

**LYON'S HAND OR POWER PUNCHES AND SHEARS.**

For Round, Flat or Square Iron,

Polishing & Buffing Machinery,
HYDRAULIC JACKS,
To raise from 2 to 120 tons.
HYDRAULIC PRESSES,

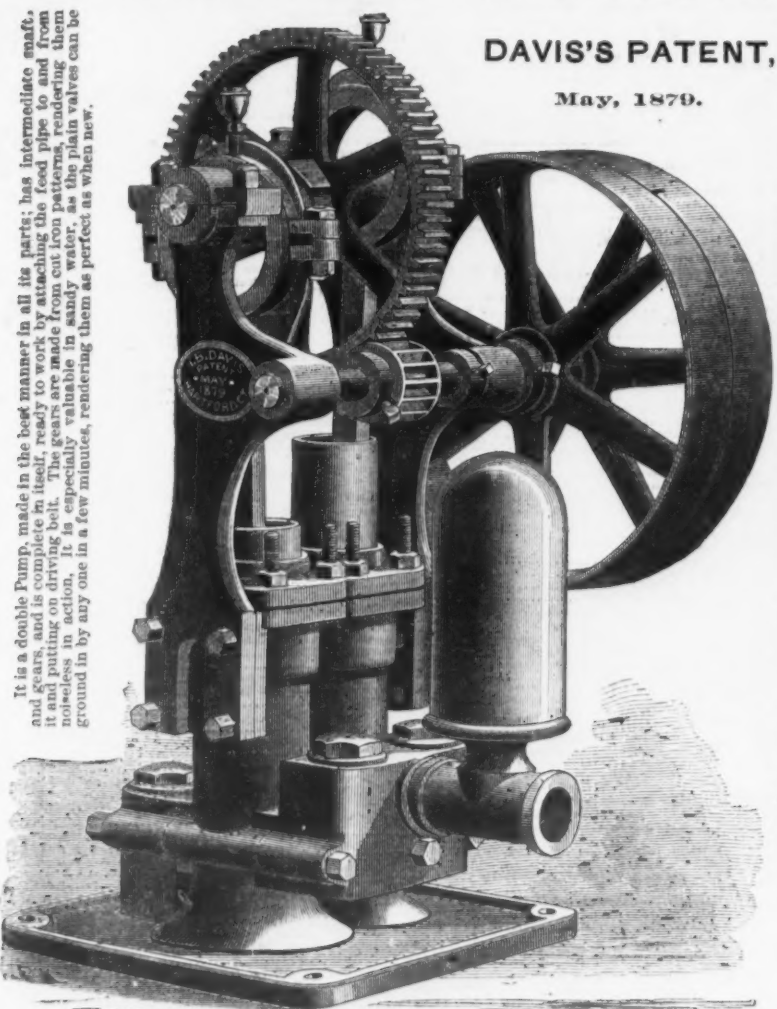
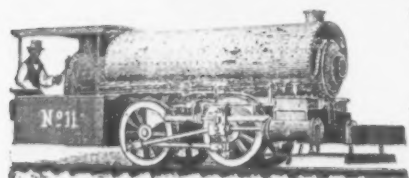
For special and general use.
HYDRAULIC HAND & POWER PUMPS
with 1 to 6 plungers, to run hydraulic presses, with either uniform or changeable speed.

Second-Hand Presses.
E. LYON & CO.,
470 Grand Street, - NEW YORK.
Send for circular of what you want.

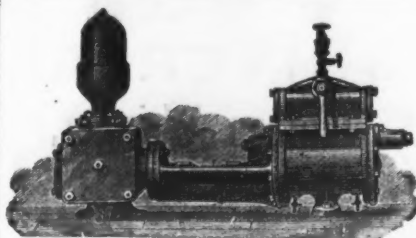
THE ECONOMIC PATENT BOILER FEED PUMP**DAVIS'S PATENT,**

May, 1879.

It is a double Pump, made in the best manner in all its parts; has intermediate shafts, and is complete in itself, ready to work by attaching the feed pipe to and from the boiler, and the water pipe to the pump, and the steam pipe to the pump, rendering them noiseless in action. It is especially valuable in ground in by any one in a few minutes, rendering them as perfect as when new.

**I. B. DAVIS, Maker, Hartford, Conn.**

Wyoming Valley Mfg. Co.,
WILKES BARRE, PA.,
BUILDERS OF NARROW GAUGE & MINE
LOCOMOTIVES,
Hoisting & Mining Machinery.

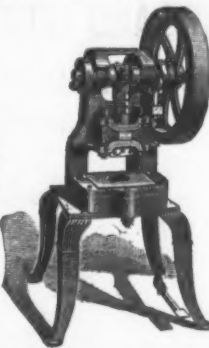
**A. S. CAMERON'S PATENT****"SPECIAL" STEAM PUMP**

Is the Standard of Excellence at Home and Abroad

For reduced price lists address **A. S. CAMERON, East 23d Street, New York.****Bliss & Williams, MANUFACTURERS OF ALL KINDS OF PRESSES and DIES.**

Also Manufacturers of
SPECIAL MACHINERY
FOR
WORKING SHEET METALS, &c. FRUIT & other CAN TOOLS.

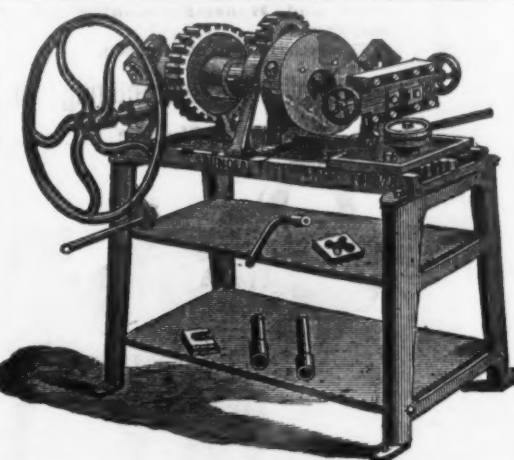
GOLD MEDAL AWARDED



Plymouth, Pearl and
John Streets,
BROOKLYN, N. Y.,
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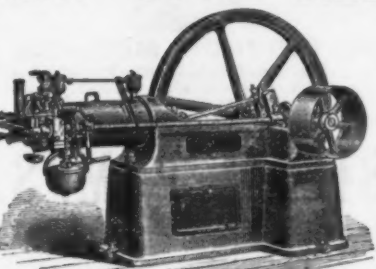


PARIS EXPOSITION, 1878.

**Saunders' Sons'**

NEW
PIPE-THREADING MACHINE,
FOR
Hand or Power,
The I X L.

Manufacturers of
Steam and Gas Fitters' Tools,
Pipe Cutting and
Threading Machines,
for Pipe Mill use, &c., a specialty.
Yonkers, N. Y.
Send for circulars.

NEW OTTO SILENT GAS ENGINE.

Working Without Boiler, Steam, Coal, Ashes or Attendance.

Started Instantly by a Match, it gives Full Power Immediately.

When Stopped, all Expense Ceases.

No explosions, no fires nor cinders, no gauges, no pumps, no engineer or other attendant while running. Recommended by insurance companies.

UNSURPASSED IN EVERY RESPECT for hoisting in warehouses, printing, ventilating, running small shops, &c.

2, 4 and 7 H. P. and upwards. Built by

SCHLEICHER, SCHUMPF & CO.,Engineers and Machinists,
3045 Chestnut Street, Philadelphia.**Ludlow Valve Mfg. Co.,**

OFFICE AND WORKS:

938 to 954 River St. & 67 to 83 Vail Ave., Troy, N. Y.

VALVES.

Double and Single Gate, 1/4 in. to 48 in.—outside and inside Screws, Indicator, &c. for Gas, Water and Steam. Send for Circular.

Also FIRE HYDRANTS.

CUYAHOGA WORKSMANUFACTURES
STEAM**Hammers**

LAND
AND
Marine Engines,
BLAST FURNACE
Machinery.

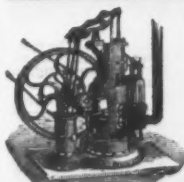
Send for Circulars.

Cleveland, Ohio, U. S. A.

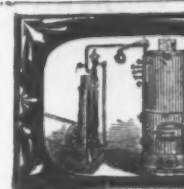
THORNE, DeHAVEN & CO., Drilling Machines,

21st Street, above Market, Philadelphia.

PORTABLE DRILLS. Driven by power in any direction.
RADIAL DRILLS. Self-feed—Large Adjustable Box Table.
VERTICAL DRILLS. Self-feeding.
MULTIPLE DRILLS. 2 to 20 Spindles.
HORIZONTAL BORING AND DRILLING MACHINES.
HAND DRILLS. CAR BOX DRILLS.
SPECIAL DRILLS. For Special Work.

**AIR ENGINES. NO WATER. NO ENGINEER.**

No extra insurance! Absolutely safe! Simple! Reliable! Durable! Most convenient and economical power known.

SHERILL ROPER AIR ENGINE CO.,Manufacturers of Air Engines, Elevators and Hoisting Machinery
91 & 93 Washington Street, New York.

ORAM & ATHERTON
NEW AND SECOND HAND MACHINERY
STAVE MACHINERY A SPECIALTY
OFFICE & WORKS 157 RIVER ST. CLEVELAND, O.

DEAD-STROKE POWER HAMMERS.

CONSTRUCTION IMPROVED.

Prices Reduced. Seven Sizes.

5 to 250 Pounds.



The 15 and 25 pound sizes are specially adapted for Plumbers' use, the other sizes for general forging. Send for circular and references.

DIENELT, EISENHARDT & CO.MAKERS,
1306, 1308, 1310 Howard St., Philadelphia, Pa.**PRESSES,****DROP HAMMERS,****DIES AND****OTHER TOOLS**

FOR THE

Manufacture of all kinds of Sheet

Metal Goods, Drop

Forgings, &c.

STILES & PARKER PRESS CO.,

MIDDLETOWN, - - CONN.

THE PRATT & WHITNEY CO.,

Hartford, Conn., U. S. A.,

Make specialties of

DROP HAMMERS

Punching Presses, Hand Drilling Machines, Hatchet
Drills, Combination Lathe Chucks, Cutters for
Teeth of Gear Wheels, Screw Plates, Hand, Machine, Nut and Pipe Taps, Bolt Cutters, &c., &c.

STEAM PUMPS

Manufactured by
Crane Bros. Mfg. Co.,
CHICAGO.

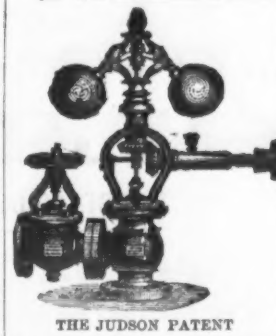
Machinery, &c.

THE JUDSON GOVERNOR.

It is a common method to advertise Governors without cost, unless satisfactory to the customer, and then charge High Prices for doing what any good Governor will do. Various Governors inferior to the "Judson" are sold in this way, operating well enough for three months, to insure collection of the pay, but becoming useless after a year's wear—their construction lacking durability. The Judson Governor is guaranteed to be not only the best Regulator of Steam Engines, but also the most durable Governor made. Parties in buying a Governor should stipulate that their durability be guaranteed, and should also take care that they do not, for much inferior Governors, pay higher prices than to see shown in the accompanying list. We guarantee the Judson Governor will do all any other Governor can do, and in accuracy and durability—the main essentials—we guarantee it shall do more.

Reduced Price List, OCTOBER 15, 1878.

For dimensions of Governor, see Illustrated Price List.



THE JUDSON PATENT

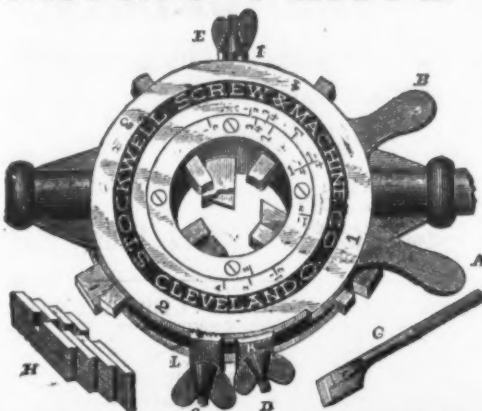
Improved Steam Governor.

No Charge for Boxing or Cartage.

JUNIUS JUDSON & SON, Rochester, N. Y.

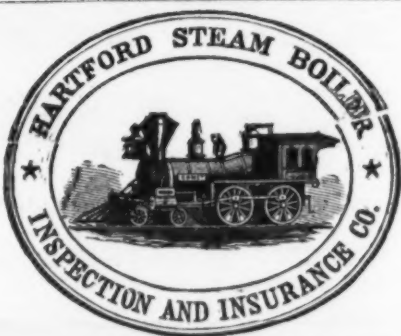
Size, Inch.	Plain.	Bright.	Extra.	Super.
1/4	\$15.00	\$17.00	\$1.00
3/8	16.00	18.00	1.00
1/2	18.00	20.00	2.00
5/8	20.00	23.00	2.25
3/4	23.00	27.00	2.50	\$6.00
7/8	27.00	31.00	2.75	7.50
1	32.00	37.00	3.25	9.00
1 1/4	36.00	41.00	3.50	11.00
1 1/2	40.00	46.00	3.75	12.00
1 3/4	45.00	52.00	4.25	14.00
2	54.00	62.00	4.50	17.00
2 1/4	64.00	73.00	5.00	21.00
2 1/2	74.00	84.00	5.50	25.00
3	84.00	95.00	6.00	31.00
3 1/2	97.00	109.00	6.50	37.00
4	112.00	125.00	7.00	43.00
4 1/2	129.00	146.00	8.00	50.00
5	160.00	176.00	9.00	60.00
6	180.00	198.00	10.00	75.00
8	200.00	220.00	12.00

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No. 2 " " " 1/2 to 1 1/4
No. 3 " " " 1/2 to 2
No. 4 " " " 1 1/2 to 3
No. 5 " " " 2 1/2 to 4
Size A threads bolts 1/4 to 3/4
Size B " " 1/2 to 1

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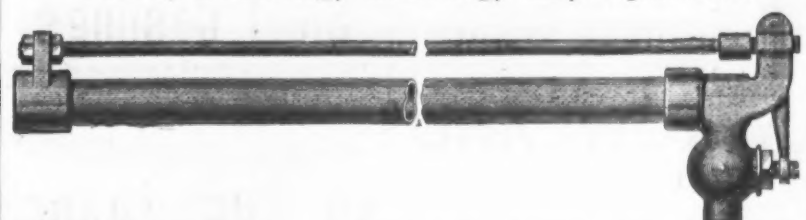
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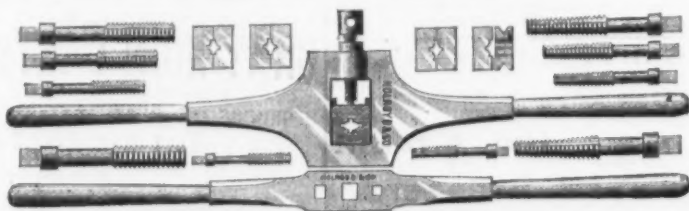
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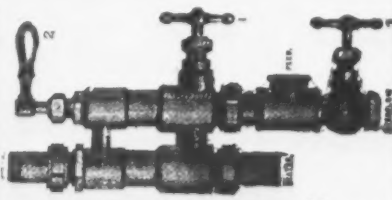
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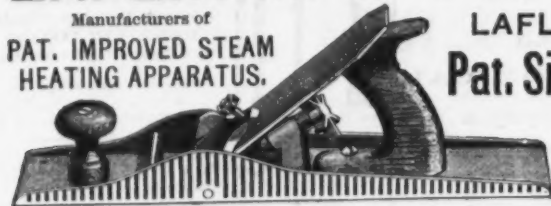
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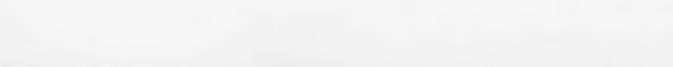
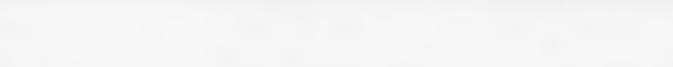
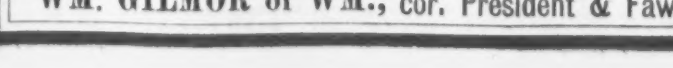
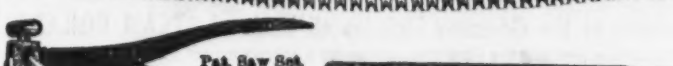
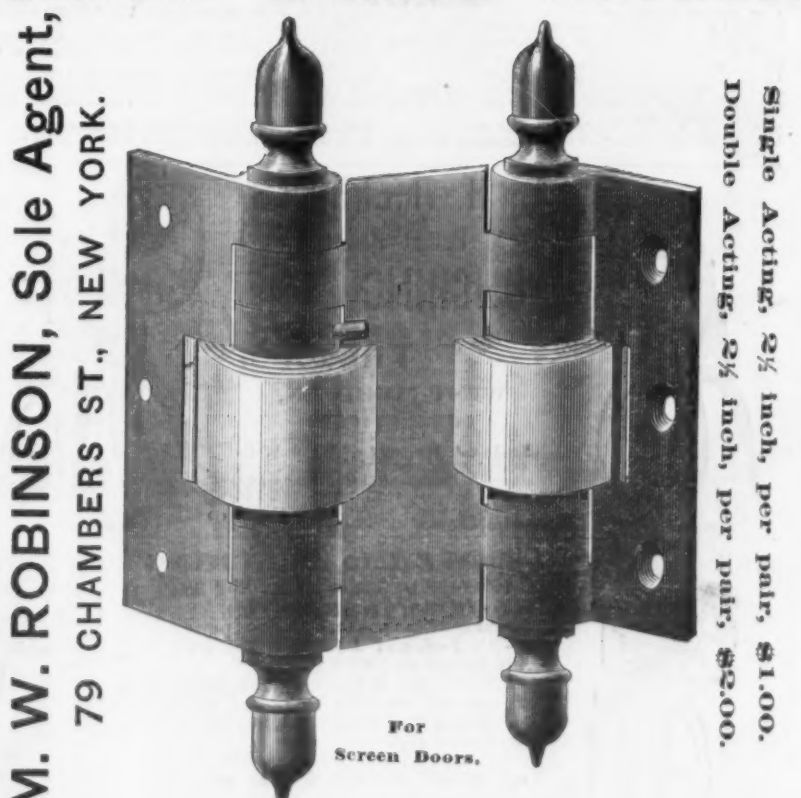
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